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1201. Five Criteria for Choosing among Poverty Programs

Margaret E. Grosh
(October 1993)

In deciding between choices in poverty programs, the chief criteria should be administrative and political feasibility, how easy it is to target the program's benefits to the poor, whether the program addresses the real problem, and, when collateral effects are weighed, whether the net effect is to reduce poverty.

Grosh addresses the issue of how to choose among discreet poverty interventions such as food stamp programs, public works, or small enterprise credit schemes where little formal policy modeling is done prior to decision making.

The minimum criteria on which to judge the relative merits of poverty programs, says Grosh, are five:

• *Administrative feasibility.* This depends on the detailed design of the program, the level of resources available for administration, and the degree of imperfection that can be tolerated.

• *Political feasibility.* This depends on how the program is promoted to the public, how coalitions of supporters or detractors are built, and the relative power of beneficiaries, suppliers, and administrators.

• *Collateral effects on the poverty strategy.* How will a safety net program affect, for example, the participants' labor supply, participation in other programs, and receipt of private interhousehold transfers, and how will those changes affect markets and government finances? What will be the net effect on poverty reduction?

• *Potential for targeting the poor.* Will the program reach significant numbers of the poor? How much leakage of benefits will there be to the nonpoor?

• *Tailoring the solution to the problem.* The program choice should address the real problem. Where the poor have suffered a loss of real wages rather than a loss of jobs, for example, transfers to the working poor may be more relevant than creating jobs. This criterion may seem obvious, but many proposals seem to ignore it.

Grosh illustrates her main points by applying these criteria to a range of poverty programs commonly used in Latin America. General subsidies of food prices, for example, are administratively and politically feasible and lower food costs to the consumer, but they are difficult to target to the poor and they may distort the economy, harming growth. Food stamps are easy to target to the poor, are fairly difficult to administer, depending on program design, but depending on program design, may encourage the use of schools and primary health care. But there is controversy about whether they encourage dependency and diminish the work ethic.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — was prepared for a conference sponsored by the Brookings Institution and Inter-American Dialogue on "Confronting the Challenge of Poverty and Inequality in Latin America," held in July 1992. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact PRDPH, room N5-067, extension 39249 (34 pages).

1202. Privatization and Foreign Investment in the Developing World, 1988–92

Frank Sader
(October 1993)

Developing countries can use privatization to attract foreign investment in two ways: by selling assets to foreign investors and by improving the general economic environment so that investment seems more likely to be profitable.

Foreign direct investment in the developing world has grown rapidly in recent years, making it one of the most important sources of financing to developing countries. Sader presents a database on about 1,100 global privatization transactions from 1988 through 1992.

Between 1988 and 1992, developing country governments earned almost US$62 billion in revenues from the sale of state-owned assets. About a third of those revenues came from foreign sources. Privatization in Latin America represents about 66 percent of privatization in the developing world. Privatization in Europe, including Eastern Europe, accounts for 17 percent, and privatization in East Asia, 13 percent. The heaviest foreign participation is in Eastern Europe, primarily for lack of domestic financing.

Foreign investors' general participation in privatization programs was strong, providing developing countries with substantial amounts of foreign exchange.

The relative size of the privatization program and the degree of openness to foreigners are important determinants of foreign direct investment. Each dollar in privatization revenue generates an additional 35 cents in new foreign direct investment inflows, and a 1 percent increase in foreign participation adds another 50 cents.

In addition to the direct inflow of funds through the sale of assets, many developing countries also increasingly attracted foreign investment outside of their privatization programs. Privatization of infrastructure and the financial sector especially seem to have sent important signals to foreign investors, indicating an improved economic environment and possibly the eventual elimination of bottlenecks. Improved expectations about the profitability of investment projects render these countries more attractive to foreign investors.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to evaluate foreign investment as a source of financing for developing countries. Copies of the paper are available from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 31047 (62 pages).

1203. Determinants of Value-Added Tax Revenue: A Cross-Section Analysis

Zeljko Bogetic and Fareed Hassan
(October 1993)

Empirical analysis of value-added tax revenues on a sample of 34 countries conforms with conventional wisdom from theoretical and case studies. The key implication is that for value-added tax to provide superior revenues, it should be levied in a single rate on as broad a base as possible. And tax administration and enforcement must be tough to ensure compliance.

Value-added tax (VAT) has become a major tax instrument in over 50 countries and an important element in tax policy advice to developing countries. But few studies have empirically tested some basic hypotheses about the performance and key feature of VAT as a revenue-raising instrument.

Bogetic and Hassan examine the main determinants of VAT revenue in a simple cross-country framework using data from 34 countries to answer certain key questions: What empirical relationship emerges from existing data on VAT revenue and VAT rates for countries with a single VAT rate? How much, on average, can a 1 percent increase in the VAT rate be expected to raise VAT revenue as measured by VAT-to-GDP ratio? What key determinants of VAT revenue emerge from a cross-country analysis of the full sample of countries? Is there a statistically significant difference in VAT revenue performance between countries with a single VAT rate and countries with multiple VAT rates?

The results of their regressions generally confirm the conventional views on the key variables influencing VAT revenue performance: the rate, the base, and rate dispersion. The rate and the base coefficients are significant and with the expected positive sign in all of the estimated versions of the model. An estimated model is used with appropriate caveats to predict VAT revenue potential in countries (such as Bulgaria) that are thinking of introducing a single rate VAT.

They also find that — other things being constant — VAT generates higher revenue in countries with a single VAT rate than in countries with multiple VAT rates. The difference in the estimated models for the two country groups is statistically significant, indicating a structural change. However this change in the pattern of VAT revenues cannot be explained exclusively in terms of differences in rate structure. A satisfactory explanation must include other factors, such as the base and tax administration capacity.

The key policy implications are simple: to provide superior revenues, VAT should be levied in a single rate on as broad a base as possible. And tax administration and enforcement must be tough to ensure compliance.

This paper — a product of the Country Operations Division, Europe and Central Asia, Country Department I — is part of a larger effort in the department to emphasize public finance reform issues in policy dialogue and economic and sector work. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faith Smith, room H5-245, extension 36072 (14 pages).

1204. Structural Adjustment, Economic Performance, and Aid Dependency in Tanzania

Nisha Agrawal, Zafar Ahmed, Michael Mered, and Roger Nord
(October 1993)

Contrary to traditional interpretation, Tanzania's increased dependence on foreign assistance during its period of adjustment did not lead to a deterioration in domestic savings performance. But the efficiency of investment has been substantially lower in Tanzania than in other reforming Sub-Saharan African countries.

Tanzania embarked on a structural adjustment program in 1986 after a decade of protracted economic decline. Its program was supported by the International Monetary Fund and the World Bank and was accompanied by a substantial increase in foreign assistance. After seven years of adjustment the environment for higher economic growth has improved, but the results are only partially encouraging: economic growth has only slightly exceeded population growth, and officially measured domestic savings have deteriorated. Meanwhile, Tanzania's dependency on foreign assistance has increased, reflected in a deterioration of the current account of the balance of payments. This has led to an increasingly heated debate about whether real adjustment is in fact taking place in Tanzania, or whether foreign aid has served to postpone adjustment instead of supporting it.

Agrawal, Ahmed, Mered, and Nord shed light on the relationship between adjustment and aid dependency on the basis of Tanzania's experience. Tanzania's weak database is adjusted in several respects to correct for the most glaring deficiencies in it. After adjustment of the database, Tanzania's performance is compared in the period 1981-85, prior to when reforms were launched, with that in the period 1986-90, which followed the launch of the Economic Recovery Program in 1986. To put the Tanzanian experience in context, its performance is also compared with that of four Sub-Saharan African countries — Ghana, Kenya, Malawi, and Uganda — which embarked on similar reform programs during the 1980s.

The adjustment of the macroeconomic data shows that, contrary to traditional interpretation, Tanzania's increased dependency of foreign assistance did not lead to a deterioration in domestic savings performance. And most of the foreign assistance was used for investment rather than for consumption. But the principal difference between Tanzania and the four Sub-Saharan African countries sampled was the efficiency with which the foreign assistance was used. Using a measure of macroeconomic return on investment, the comparison shows that Tanzania is getting very little return on domestic investment even after the introduction of structural reforms. There are several reasons for this, including the dominance of the Tanzanian economy by a large and highly inefficient parastatal sector. If Tanzania is to generate the accelerated growth that it so urgently needs, one of the key areas of policy reform needs to be the increase in productivity of domestic investment.

This paper — a joint product of the Bank's Country Operations Division, Eastern Africa Department and the Fiscal Affairs and African Departments of the International Monetary Fund. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kathryn Rivera, room J10-281, extension 34141 (28 pages).

1205. Wage and Employment Decisions in the Russian Economy: An Analysis of Developments in 1992

Simon Commander, Leonid Liberman, and Ruslan Yemtsov
(October 1993)

Lax monetary policy and decentralized insider power — giving rise to employment stability and wage rigidity — are powerful ingredients for hyperinflation.

Commander, Liberman, and Yemtsov analyze changes in the Russian labor market in 1992. They focus on the path of wages and employment in a context of partial price liberalization and considerable ambiguity about government and central bank policy.

Under the former Soviet economy, the firm was the bedrock of the centrally planned system. The relaxation of centralized controls did not result in substantial employment losses partly because of the implicit "moral economy" of the system and partly because of continuing constraints on wages.

In 1992, the wage structure and employment levels in the economy's state sector exhibited surprising stability, reflecting the system's immense inertia. Despite announced regime changes, at the end of 1992 the number of jobseekers was no more than 1.5 percent of the labor force.

But significant changes have been made: wage and employment decisions have been widely liberalized; some restraints on labor mobility have been removed; changes have also been made in ownership title; and there has been some expansion in the private sector, as yet largely concentrated in services.

These substantive changes are important for future expectations about entitlements to jobs and income, but the changes remain restricted and the sources of these restrictions imply significant economic costs. The underpinning of the current stagflation is the inability to break the soft budget constraint on state firms and to impose realistically a systematic, transparent set of constraints on the firms' financing demands. This has combined with the firms' continuing ability to exercise market power alongside weak controls on wage claims.

Employment transitions have been dominated by high levels of quits at the base of the skill structure. Involuntary separations have been limited, involving mostly women and white collar workers. Firms commonly provide de factor unemployment compensation to workers in the form of minimum wage payments with little or no work requirement. There is evidence of some increase in the proportion of laid-off workers among the unemployed, but firms seem to prefer hoarding labor in light of uncertainty about policy, firm, or product-specific market prospects.

Wages have been more volatile. Wages initially bore almost all of the adjustment costs, but have shown mild recovery thereafter. Lax monetary policy and decentralized insider power, giving rise to relative employment stability and real wage rigidity, are powerful ingredients for hyperinflation.

This paper — a product of the National Economic Management Division, Economic Development Institute, and Moscow State University — is part of a larger effort to analyze the workings of labor markets in transitional economies. The study is part of a research project funded by the Bank's Research Support Budget on "The Labor Market in Transitional Socialist Economies" (RPO 677-30). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Valerie Reid, room M3-047, extension 35195 (56 pages).

1206. Empirical Perspectives on National Index Funds

Ishac Diwan, Vihang Errunza, and Lemma W. Senbet
(October 1993)

U.S. investors could benefit from diversification that involves national index funds, particularly funds originating from countries to whose local markets they have limited access. Country funds also improve pricing efficiency in local capital markets and help local firms mobilize local capital at lower cost.

Closed-end national index funds (NIFs or "country funds") invest primarily in the stocks of the originating countries, such as Brazil, India, and the Republic of Korea. They are typically traded in the organized exchanges of industrial countries, such as the United States and the United Kingdom. Although NIFs have not raised large amounts of external funds, recently they have expanded rapidly.

In a companion paper ("The Pricing of Country Funds and Their Role in Capital Mobilization for Emerging Economies," WPS 1058), Diwan, Errunza, and Senbet develop a theoretical model to compare the pricing of country funds in the reference markets (say, the United States) with the pricing of the underlying component assets (or net asset valuation) in the originating securities market under various assumptions about market structure.

In this paper, they empirically investigate the hypotheses that emerge from the model. They first analyze country fund pricing and associated premia, or discounts, and then explore the issue of diversification services provided by NIFs from emerging markets. The emphasis on emerging markets is important as many markets are otherwise closed to foreign investors. They compare results across emerging and industrial markets and, where appropriate, over different subperiods.

Their evidence suggests that U.S. investors could benefit significantly in diversification that involves NIFs, particularly funds originating from countries to whose local markets they have limited access.

Diwan, Errunza, and Senbet investigate the pricing of NIFs, testing their principal theoretical predictions about the relative significance of the home market, host market, and global closed-end fund factors. They analyze initial (public-offering literature) and after-market returns, and explain the behavior of fund premia/discounts. The evidence shows that variables that proxy the degree of access and substitution effects show up as significant determinants o' country fund premia/discounts.

The empirical study supports their theory about the welfare implication for emerging economies that originate country funds. The model suggests that country funds can improve pricing efficiency in local capital markets and promote local capital mobilization by firms at more favorable terms (lower costs of capital).

This paper — a product of the Debt and International Finance Division, International Economics Department — is a companion paper to the theoretical analysis of country funds by the same authors, "The Pricing of Country Funds and Their Role in Capital Mobilization for Emerging Economies," Policy Research Working Paper 1058. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Azeb Yideru, room H7-053, extension 36067 (49 pages).

1207. Characteristics and Performance of Settlement Programs: A Review

Bill H. Kinsey and Hans P. Binswanger
(October 1993)

Settlement programs should be flexible and decentralized and should mostly allocate cropland to families, whose land rights must be clearly defined as ownership or long-term leases. If poor settlers are to benefit or succeed, settlement cannot be based on credit finance but must include grants.

The studies and cases reviewed by Kinsey and Binswanger suggest that settlement programs are too often designed on the assumption that all settlers will or can succeed. This has led to too much centralized administration and rigid designs, rather than reliance on decentralized approaches, flexibility in implementation, support for spontaneous settlement, and reliance on the settlers' own investment capacity.

Collective forms of crop production have not worked. Cropland is best allocated to individual families whose land rights must be clearly defined as ownership or long-term leases. Farm sizes must be flexibly adjusted to skills, the availability of family labor, and the families' capital ownership. Settlers should therefore be allowed to sell or rent the land to other beneficiaries. If poor settlers are to benefit or succeed, settlement cannot be based on credit finance but must include grants.

Paternalistic constraints on the choice of crops or technologies, marketing, or participation in the labor force have usually not been enforceable or have had negative effects.

This paper — a product of the Agriculture and Environment Division, Southern Africa Department — is part of a larger effort in the department to address land tenure issues in Southern Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hans Binswanger, room I4-021, extension 31871 (40 pages).

1208. Primary School Achievement in English and Mathematics in Zimbabwe: A Multi-Level Analysis

Levi M. Nyagura and Abby Riddell
(October 1993)

In Zimbabwe's primary schools, higher achievement in math is associated with the amount of teacher training and instructional time, as well as the pupil-teacher ratio. Higher achievement in English is associated with the pupil-teacher and textbook-to-pupil ratios as well as the amount of teacher training.

Using a multilevel modeling procedure, Nyagura and Riddell explore:

- The percentage of variance in primary school achievement in Zimbabwe that could be attributed to the types of schools and classes attended.
- The differences between schools in student achievement in mathematics and English.
- The reasons for these differences.

They compare five types of schools. Students in Former A ("European") schools and high-fee schools outperform those in Former B ("African") schools, low-fee schools, and district council schools in both subjects.

In English, school-type differences persist after controlling for student intake variables. For mathematics, they disappear.

School and class variables related to higher math achievement include the amount of teacher training and instructional time, and pupil-teacher ratio.

Higher achievement in English is related to the pupil-teacher and textbook-to-pupil ratios, and to the amount of teacher training.

This paper — a product of the Education and Social Policy Department — was prepared for the *Building Research Capacity* work program, which helps countries improve their capabilities in education research, evaluation, and assessments so they can inform policymakers about local learning conditions. Support for the research was provided by the Population and Human Resources Department and the African Capacity Development Fund. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Ian Conachy, room S10-022, extension 33669 (33 pages).

1209. Should East Asia Go Regional? No, No, and Maybe

Arvind Panagariya
(October 1993)

An evaluation of three approaches to East Asian regionalism: (1) The costs of subregional preferential trading schemes in East Asia have far outweighed their expected benefits. (2) Although the threat *of a formal East Asian trading bloc along the lines of the EC may serve some purpose, its actual execution might be difficult. (3) And although simultaneous, most favored nation-style, nondiscriminatory regionwide liberalization may be feasible, the case for it is far from airtight.*

Panagariya studies the case for three different approaches to regionalism in East Asia.

First, he examines closely the only serious attempt at preferential trading in the region — the Association of Southeast Asian Nations (ASEAN), which has recently announced plans to form the ASEAN Free Trade Area (AFTA). Conclusion: the costs of such subregional schemes far outweigh their expected benefits.

Second, he evaluates the case for a formal East Asian trading bloc along the lines of the European Community, and concludes that although the *threat* of such a bloc may serve some purpose, its actual execution might be difficult, given the diverse levels of protection across different countries in the region, and the possibility of retaliation from the United States through increased protection against East Asian goods.

Third, he examines the case for *simultaneous*, most favored nation-style, nondiscriminatory regionwide liberalization. Panagariya argues that although such a regional approach "may" be feasible, the case for it is far from airtight. On the one hand, this approach will face less resistance from the United States, and is likely to promote an open world trading system in the long run. On the other hand, in the short run it is likely to be resisted because of the adverse effect on terms of trade in the participating countries.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of the Regional Integration Initiative Study of the Bank's East Asia Region and of the research project funded by the Bank's Research Support Budget, "Understanding Bilateral Trade Flows: An Application to East Asia" (RPO 677-86). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (57 pages).

1210. The Taxation of Natural Resources: Principles and Policy Issues

Robin Boadway and Frank Flatters
(October 1993)

Developing countries are increasingly aware of the desirability of using taxes to capture a share of the rents from local natural resources. The time has come in many countries when the gains may be much greater if the rather crude forms of resource taxation — such as royalties, production taxes, and export levies — were replaced by simple forms of rent taxes rather than attempting to refine existing taxes further.

Natural resources are typically subject both to taxation under the income tax system and to special resource taxes. Properly designed income taxes attempt to include capital income on a uniform basis. But in most countries the income tax treats resource industries more favorably than most other industries — through favorable treatment of such capital expenses as depletion, exploration and development, and the cost of acquiring resource properties.

The case for special resource taxes is precisely to tax resource rents over and above the levies implicit in general income taxes. There are two justifications for this: (1) the efficiency-based argument that a tax on resource rents is nondistorting and complementary, and (2) the "equity" argument that the property rights to resources ought to accrue to the public at large rather than to private citizens since the rents represent the bounty nature has bestowed on the economy rather than a reward for economic effort.

If the main purpose of a resource tax is to capture rents for the public sector, the base of resource taxes should be economic rents (or their present value equivalent), contend Boadway and Flatters.

Actual resource taxes differ from rent taxes in significant ways. Unlike a general income tax — which allows the resource industries to understate capital income — resource taxes often overstate rents. This is because they typically do not offer full deductions for all costs, especially capital costs. Some systems tax revenues without allowing any deductions for costs; others allow the deduction of current costs only. As a result, they discourage investment activity in resource industries, encourage the exploitation of high-grade relative to low-grade resources, and make it difficult to impose high tax rates for fear of making the marginal tax rate higher than 100 percent.

Boadway and Flatters discuss three alternative "ideal" ways for the government to divert a share of rents to the public sector:

- Levy a tax on rents, ideally in the form of a cash flow tax.
- Require firms to bid for the rights to exploit resources.
- Take a share of equity in the firm.

They discuss these options in terms of their implications for the ability of firms to obtain finance, the allocation of risk, the share of rents accruing to the public sector, the extent of involvement of foreign firms, and other factors.

The time has come in many countries, they say, when gains from further refinement of imperfect existing taxes on resources are less than replacing them with simpler, more efficient forms of pure rent taxes.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to analyze public policy options for natural resource taxation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (57 pages).

1211. Savings-Investment Correlations and Capital Mobility in Developing Countries

Nlandu Mamingi
(October 1993)

Many developing countries are financially integrated in the long run and several show evidence of capital mobility in the short run. Savings-investment correlations are lower for middle-income than for lower-income countries.

Mamingi estimates savings and investment correlations for 58 developing countries to assess the capital mobility (in the Feldstein-Horioka sense) in these countries.

Using a new estimation technique (fully modified ordinary least squares) — which simultaneously corrects for serial correlation, endogeneity, and sample bias (asymptotically) — Mamingi finds that many developing countries are financially integrated in the long run.

More important, the estimates from this robust estimation technique indicate that savings-investment correlations are lower for middle-income than for lower-income countries.

Mamingi also provides evidence of capital mobility for several of these countries in the short run.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to study the effects of external financing on developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 31047 (28 pages).

1212. The Links between Economic Policy and Research: Three Examples from Ghana and Some General Thoughts

Ravi Kanbur
(October 1993)

For research to reach policymakers and be useful to them, it should be as country-specific and policy-specific as possible. It should be presented in short, pithy summaries that policymakers and their top advisors can understand. Most senior policymakers are unlikely to read anything longer than two pages.

Kanbur gives examples of research recently published in professional journals that directly helped, or could help, in formulating policy advice (and perhaps even policymaking). An article by Younger (1992) was helpful in analyzing a problem in Ghana, where aid flows to government crowded out the private sector (especially private investment), which competed for scarce domestic resources. Younger suggested that tighter fiscal policy combined with looser monetary policy would promote more investment. Younger's analysis helped frame "thinking in an area where muddleheadedness is common," and provided Kanbur with analytical ammunition when he supported budgetary restraint. In another example, research based on the Ghana Living Standards Survey helped identify the poverty consequences of alternative revenue instruments.

The link between economic policy and research *can* be made, says Kanbur, but that does not mean it *will* be made. Usually such a link relies on the chance placing of a researcher in the policymaking and advising trenches.

One problem is that policymakers face highly specific, timebound problems and are interested only in answers to particular questions. But what matters to researchers is the generality of results or the methodological innovations in analysis. Journals turn down papers that answer very specific policy questions.

The appropriate dissemination of research results requires that researchers speak the language of policymakers. Kanbur proposes that:

- Professional researchers should do highly country-specific and policy-specific studies that use the best-practice methodological tools plus a detailed institutional knowledge of the country.

• There should be a continuous attempt at synthesizing the findings of professional research for the benefit of the policy community, as is done in the *World Bank Research Observer*. "We need single-page or double-page flysheets summarizing research results," says Kanbur, particularly those that are country-specific and policy-specific.

• Research should be presented in short, pithy summaries that policymakers and their top advisors can understand, setting out the policy question addressed and the answer provided (the latter are not so common, especially for Africa). "A basic rule of thumb I have developed is that anything longer than two pages is unlikely to be read by the most senior policymakers, the limit for the next most senior is four pages, then eight pages, and 16 pages. If it is longer than 16 pages, do not bother to send it to the policy fraternity (unless it is prefaced by a two-page summary)."

This paper — a product of the Ghana Resident Mission — was prepared for presentation at the Eastern Economic Association meetings, Washington, DC, March 19-21, 1993. Copies of the paper are available free from the World Bank, P.O. Box M27, Accra, Ghana. Please contact Phyllis-Marie Attipoe, Ghana Resident Mission, extension 526-3003 (15 pages).

1213. Japanese Foreign Direct Investment: Recent Trends, Determinants, and Prospects

Kwang W. Jun, Frank Sader, Haruo Horaguchi, and Hyuntai Kwak
(November 1993)

The apparent shift of Japan's foreign direct investment from higher-income host countries (such as the United States) toward Asian developing countries (such as China) may create opportunities for sustained growth in these lower income economies. This shift seems to be part of a strategic reorientation that will gradually reduce Japanese dependence on the United States while Japan explores intra-Asian opportunities.

In the late 1980s, Japan became the biggest source of foreign direct investment (FDI) in the world. The main beneficiaries of the rapid increase in investment flows were industrial countries, but the developing world (especially East Asia and Latin America) also received substantial inflows.

In East Asia, the newly industrial economies (NIEs) of Hong Kong, Republic of Korea, Singapore, and Taiwan (China) were, at first, production bases for Japanese manufacturing in the 1970s and early 1980s. But in the late 1980s, these countries became new, expanding consumer markets, attracting huge Japanese investments in the tertiary (service) sector, while investments in manufacturing shrank rapidly because of rising labor costs. The Association of Southeast Nations (ASEAN) and China became Japan's new production base.

In Latin America (mostly small Caribbean countries) Japan's focus is almost exclusively on tax havens. Globally, Japan's investments in the secondary (manufacturing) and service sectors of the major Latin American nations are only marginal.

Japanese investment flows declined drastically after 1989, mostly because of the depressed global and domestic economy, after rapid asset price deflation in Japan. Hardest hit by the decline were the United States and Europe. Japanese FDI flows to developing countries also declined, but less. The biggest losers were the NIEs and the Caribbean tax havens. Japanese investments continued to grow in other Latin American countries and, even more, in the ASEAN and China.

Japanese investors sharply reduced tertiary sector investments, primarily geared to maintaining or expanding markets. Investments in the secondary sector, making use of low-cost production, continued to expand.

This trend is expected to continue in the near future, with FDI flows declining further, albeit more slowly. Low-wage production countries such as China and Indonesia will attract an increasing share. Investments to expand markets in the industrial countries and the NIEs are likely to decline.

But medium-term prospects for Japanese FDI in developing countries are brighter, as economic recovery and continuing current account surpluses in Japan will lead to a resumption of active foreign investment by Japanese multinational corporations.

This paper—a joint product of the World Bank's Debt and International Finance Division, International Economics Department, and the Japan Center for International Finance—is part of IECDI's growing program of research on foreign direct investment. The study was funded by the Bank's Research Support Budget under the research project "Japanese FDI in Developing Countries: Trends, Determinants, and Policies" (RPO 676-57). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheilah King-Watson, room S8-125, extension 33730 (49 pages).

1214. Trade, Aid, and Investment in Sub-Saharan Africa

Ishrat Husain
(November 1993)

Growth and sustainable development will come to Sub-Saharan Africa only by strengthening its competitiveness and recapturing its lost share in world markets. This can be achieved by investing more in education, training, and skill development and by improving the links between human resources and the world market (through trade, technology, investment, and capital flows.

Trade, aid, and investment are more inextricably linked in Sub-Saharan Africa than anywhere else in the world, contends Husain, whose survey of Sub-Saharan Africa's prospects for trade, aid, and investment lead to the following broad conclusions:

• Developing an outward orientation, improving competitiveness, and recapturing its lost share in world markets offers a higher potential payoff than any other strategy for growth and sustainable development in Sub-Saharan countries. If the region had maintained internal competitiveness and retained its 1970 share of world exports, successfully defending against "new" entrants, its 1990 level of exports would have been at least $50 billion higher than actual earnings — assuming that the composition of Sub-Saharan exports would have changed to reflect changes in world trade. If the region continued to rely on exports of commodity products alone, the relative gains would have been much smaller.

• In the last decade, Sub-Saharan Africa has become increasingly dependent on external resource flows for investment, imports, and development. But there is little chance of sustained high levels of aid because of budget constraints in the OECD countries, competing demands from new claimants, and the new conditionalities imposed by bilateral donors (for democratization, reduced military spending, and improved human rights). Most African countries must mobilize domestic resources and increase domestic savings rates by reducing public sector dissavings, the financial losses of public enterprises, and other non productive spending. Certain low-middle-income African countries can attract a significant amount of foreign direct investment, but most resource-poor countries — especially in the Sahel and the Horn of Africa — will continue to depend on foreign aid.

- There must be a more durable solution to Africa's debt problem. Only half of the debt service due can be paid, suggesting the urgent need to reduce the debt stock and thus debt servicing obligations, in alignment with debt servicing capacity. Many current proposals under discussion, if implemented, can bring considerable relief.
- Several Sub-Saharan countries can attract significant investment because of their location, low labor costs, natural resource endowments, and the size of their domestic market. But productive investment levels in most African countries have remained depressed, and even where economic policy reform has been implemented, the investor response — both domestic and foreign — has been poor. Uncertainty, fears of policy reversals, lack of credibility and continuity, the contagion effect, and more attractive opportunities elsewhere reinforce such structural weaknesses in Sub-Saharan Africa as poor infrastructure, inefficient services, and a weak human resource base to deprive Africa of new investment.

This paper — a product of the Africa Regional Office, Office of the Chief Economist — was presented at the Royal African Society Conference on "Africa '93: Governance, Business Aid" held at Oxford, England, on March 21-23. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Michele Youssef, room J5-237, extension 34637 (47 pages).

1215. How Much Do Distortions Affect Growth?

William Easterly
(November 1993)

Contrary to the traditional view that distortions of relative prices have modest effects, Easterly finds that distortions can greatly affect growth and welfare.

Easterly presents a simple endogenous growth model (with two types of capital) that shows the sizable long-run effects on growth of distortionary policies. The model applies to many different types of distortions of relative prices common in developing countries — for example, price controls, black market exchange rates, and differential taxes and tariffs.

The model shows that distortions of relative input prices can greatly affect growth and welfare. The magnitude of the effect depends on the production elasticity of substitution. With high substitutability, the effects on growth and welfare, although possibly large, are bounded, no matter how high the rate of distortion.

Subsidizing inputs and investment goods can increase growth, even though it worsens welfare. But a subsidy to one capital good financed by a tax on another capital good unambiguously reduces growth.

Empirical results show strong negative effects from variance in the relative prices of investment goods across sectors, while also confirming and extending earlier results showing that penalizing investment goods and distorting financial markets reduce growth.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to relate long-run growth to national policies. The study was funded by the Bank's Research Support Budget under the research project "How Do National Policies Affect Long-Run Growth?" (RPO 676-66). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (30 pages).

1216. Regulation, Institutions, and Commitment: Privatization and Regulation in the Argentine Telecommunications Sector

Alice Hill and Manuel Angel Abdala
(November 1993)

ENTel's privatization appears to have had a net positive impact on Argentina's reputation and welfare. But failure to establish a regulatory regime in advance was costly in terms of the sale price the government received and the tariff levels demanded by investors. If this neglect persists, it may hurt the sector's performance.

In 1990, Argentina privatized its state-owned telephone company, ENTel. Shifting telecommunications to the private sector was one of the first actions taken under the reform program of the new president, Carlos Saul Menem.

In privatizing ENTel, the government focused on privatization as a way of establishing its reform credentials. Establishing a post-privatization regulatory regime was given lower priority. A well-defined regulatory regime was not in place before the sale, but privatization took place nonetheless.

Hill and Abdala find that despite the delay in implementing a regulatory regime, ENTel's privatization appears to have had a net positive impact, both on Argentina's reputation and on welfare. The reform program had its own "virtuous cycle," creating and reinforcing credibility in the short run. But the neglect of the regulatory regime appears to have been costly in terms of the sale price that the government received and the tariff levels that investors demanded. In the long run, this neglect, if it persists, may have a negative impact on the telecommunications sector's performance.

Regulation plays an important role in the private provision of telecommunications. Many argue that competition should be limited to allow economies of scale. But limited competition can lead to abuses of monopoly power and to demands from customers and suppliers for a regulatory regime to protect them from such abuses. In addition, the sector requires high sunk costs and asset specificity and the assets' owners are particularly exposed to the risks of expropriation — either outright (through nationalization) or gradual (through service requirements or low tariffs). A stable, credible regulatory environment reduces the risk of investment in this sector and reduces the expected rate of return that private investors would require to participate. Establishing a stable, credible regulatory regime before privatization increases the value of a privatized telecommunications firm to potential purchasers by reducing the risk associated with the purchase. This in turn affects the price generated by the selling government. By failing to establish such a regime in advance, the Argentine government received a lower sale price and increased the probability that buyers would capture windfall profits.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger regulatory research effort in the department. The study was funded by the Bank's Research Support Budget under the research project "Regulation, Institutions, and Economic Efficiency" (RPO 676-94). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Daniele Evans, room N9-057, extension 38526 (64 pages).

1217. Unitary versus Collective Models of the Household: Time to Shift the Burden of Proof?

Pierre-André Chiappori, Lawrence Haddad, John Hoddinott, and Ravi Kanbur
(November 1993)

A case for shifting from the unitary to the collective model of the household — in which the household may be viewed as a factory in which individuals are motivated at times by altruism, at times by self-interest, and often by both.

Until recently, most economists viewed the household as a collection of individuals who behave as if in agreement on how best to combine time and goods (purchased or produced at home) to produce commodities that maximize some common welfare index. This model has been extended far beyond standard demand analysis to include the determinants of health, fertility, education, child fostering, migration, labor supply, home production, land tenure, and crop adoption.

The appeal of the "unitary model" is the simplicity of comparative statics generated and the diversity of issues it can address. But, argue the authors, its theoretical foundations are weak and restrictive; its underlying assumptions are of questionable validity; it has not stood up well to empirical testing; and it ignores or obscures important policy issues.

They argue that economists should regard households as "collective" rather than unitary entities. They make a case for accepting the collective model (with cooperative and noncooperative versions) as the industry standard — with caveats. The unitary model should be regarded as a special subset of the collective approach, suitable under certain conditions. The burden of proof should shift to those who claim the unitary model as the rule and collective models as the exception.

Implicit in the authors' argument is the view that household economics has not taken Becker seriously enough. "A household is truly a 'small factory,'" wrote Becker (1965). "It combines capital goods, raw materials, and labor to clean, feed, procreate, and otherwise produce useful commodities." The authors, too, perceive the household as a factory, which, like all factories, contains individuals who — motivated at times by altruism, at times by self-interest, and often by both — cajole, cooperate, threaten, help, argue, support, and, indeed, occasionally walk out on each other. Labor economists and industrial organization theorists have long exploited the value of going inside the "black box" of the factory. It is time to do the same for household economics, say the authors.

This paper — a product of the Ghana Resident Mission — was originally prepared for presentation at the meetings of the American Economics Association, held in Anaheim, California, January 5–7, 1993. It was revised for presentation at the meetings of the Canadian Economics Association, held in Ottawa, Ontario, Canada, June 3–5, 1993. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Phyllis-Marie Attipoe, Ghana Resident Mission, extension 526-3002 (37 pages).

1218. Implementation of Trade Reform in Sub-Saharan Africa: How Much Heat and How Much Light?

John Nash
(November 1993)

Mauritius and Ghana made greater strides than other Sub-Saharan African countries in trade reform. Some Sub-Saharan countries made progress that was later reversed — either dramatically (Madagascar and Zambia) or incrementally (Kenya, Nigeria, and Senegal). But others (Uganda) have shown significant recent progress. By virtually every measure, the Communauté financière Africaine (franc zone) countries as a group have not been as successful as the non-franc-zone countries in implementing trade reform. Changes in trade policy — including nontariff barriers — can be quantified in terms of "tariff equivalence" using a new method described in this paper.

Adjustment programs in Sub-Saharan Africa have been somewhat less intensive in trade reform than programs in other countries have been. Implementation of trade reform overall, however (but not the most important reforms), has been better in Sub-Saharan Africa. Retrogression has also been more frequent.

As a group, the intensive adjustment lending countries made significant progress in the 1980s and early 1990s, but there was significant variation among them. For Sub-Saharan Africa, progress has been more impressive in recent years than in earlier years. In many countries, adjustment did not begin until the mid-1980s and relatively few measures were implemented up front. For the franc-zone countries, underimplementation rates are lower in the most recent data, and by some — but not all — measures their openness has improved more in recent years. By virtually all measures, however, improvements over earlier periods have not been as great for non-franc-zone countries.

Reduced protection was largely offset by real devaluation in most country groups and, by most measures, incentives to produce import substitutes actually improved in the years immediately after the first adjustment loan. In more recent years, the incentives have fallen modestly.

Using a new method for quantifying nontariff protection in terms of "tariff equivalence," Nash argues that, in general, countries are not in danger of "de-industrialization" from the rapid disprotection of import-substituting industry. However, franc-zone countries showed greater declines in incentives for import substitution because of their lower rate of real devaluation. One implication may be that their ability to reduce tariffs and nontariff barriers is impeded by their inability to offset them with devaluations as other countries did. Non-franc-zone countries reduced tariff-equivalent protection in recent years by 15 to 49 percentage points more than franc-zone countries, while incentives declined by 15 to 20 percentage points more in the franc-zone countries.

How open are the trade regimes at this point? The decline in tariff-equivalent protection, although not trivial, is insufficient to reduce the protection to moderate levels relative to deep reformers in East Asia and Latin America.

The biggest problem is with foreign exchange allocation. Mauritius may be the only non-franc zone Sub-Saharan country in which the currency is essentially convertible and has been for some time. This basic reform has not begun in most countries or has only recently been completed (Ghana).

This paper — a product of the UNDP/World Bank Trade Expansion Program and the Trade Policy Division, Policy Research Department — is part of larger efforts in the department to focus on adjustment problems in Africa and to develop quantitative measures of economic policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (44 pages).

1219. Decentralizing Water Resource Management: Economic Incentives, Accountability, and Assurance

K. William Easter and Robert R. Hearne
(November 1993)

Private sector involvement and user participation in water resource management, if properly structured, can provide the incentives needed to stabilize and improve the efficiency of irrigation and water supply systems. Cost recovery is excellent in many projects in which water management and operations and maintenance are entrusted to water users.

Private sector involvement and user participation in water resource management are not new, say Easter and Hearne. They give examples that demonstrate how willing users and the private sector are able to improve water use and play a larger role in water resources management.

User participation and private sector involvement, if properly structured, can provide the incentives needed to stabilize and improve the efficiency of irrigation and water supply systems. They can add flexibility, transparency, and accountability and can reduce the state's administrative and financial burden. A 1989 World Bank review of 21 impact evaluations of irrigation projects, for example, found cost recovery to be excellent in those projects in which water management and operations and maintenance had been entrusted to water users.

Greater private sector and user participation can effectively increase user responsibility for managing and financing water projects while freeing governments to focus on broader water resource management concerns.

Easter and Hearne provide examples of decentralized water management in developing country water supply and irrigation systems. Governments should:

- More actively regulate private sector exploitation of groundwater, especially for irrigation.
- Take measures to encourage price competition among private suppliers of water for both domestic and agricultural uses.
- Play an active role in organizing water user associations, especially for irrigation and rural water supply systems, and in giving them technical assistance.

As numerous examples highlight, such activities should be designed to reduce the transaction costs of organizing and to establish a sense of assurance and accountability within the water user community. Once this is done, the community can deal with problems associated with excludability and unwillingness to pay.

This paper — a product of the Agricultural Policies Division, Agriculture and Natural Resources Department — is part of a larger effort in the department to analyze water resource management policies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Maggie Wu, room N8-043, extension 30480 (27 pages).

1220. Developing Countries and the Uruguay Round: Negotiations on Services

Bernard Hoekman
(November 1993)

Many developing countries are pursuing regulatory reform and liberalization. To what extent will signing the General Agreement on Trade in Services help governments trying to make their service sectors more efficient? Is the result of the defensive negotiating strategy that was pursued consistent with the shift toward a policy of liberalizing service markets?

In the late 1980s many developing countries experienced something of a paradigm shift: governments began to pursue more market-oriented domestic policies. There was an increasing perception that liberalizing access to service markets was a potentially low-cost, effective method for improving the quality and efficiency of domestic service sectors. These unilateral policy developments increased the incentives for developing countries as a group to participate in a multilateral agreement to liberalize trade in services.

Hoekman explores the extent to which the initial negotiating positions of developing countries are reflected in the draft General Agreement on Trade in Services (GATS) that has emerged from the Uruguay Round negotiations. He investigates whether the unilateral policy changes implemented by many developing countries in the late 1980s had a discernible impact on the draft GATS for developing countries.

Many developing countries are pursuing regulatory reform and liberalization. To what extent will signing the GATS help governments trying to make their service sectors more efficient? Is the result of the defensive negotiating strategy that was pursued consistent with the shift toward a policy of liberalizing service markets?

This issue is of particular relevance insofar as recent liberalization-plus-privatization programs in developing countries were driven by external forces rather than domestic pressure (industry) groups — which might reduce the credibility of liberalization policies. Membership in a binding multilateral agreement could help bolster reform efforts by increasing the costs of "backsliding."

This paper — a product of the Finance and Private Sector Development Division, Europe and Central Asia, and Middle East and North Africa Regions Technical Department — draws in part on a report incorporated in a forthcoming United Nations/World Bank handbook, *Liberalizing International Transactions in Services*. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Laura O'Connor, room H8-090, extension 37009 (36 pages).

1221. Does Research and Development Contribute to Economic Growth in Developing Countries?

Nancy Birdsall and Changyong Rhee
(November 1993)

Across all countries, more research and development (R&D) activity does not contribute to higher income. Higher income, *however, does lead to more R&D activity, suggesting that R&D becomes important only after a country reaches a certain stage of development. For developing countries, it appears that countries that are behind grow by catching up technologically, not by advancing the technological frontier.*

Using UNESCO data for research and development (R&D) expenditures and personnel, Birdsall and Rhee document international differences in R&D activities and assess the determinants of these differences and the link between R&D and economic growth.

For a group of OECD countries, R&D activity and economic growth are correlated for one of their two proxies. Contrary to the findings of Romer and Lichtenberg, however, they are not correlated across all (including developing) countries.

Moreover, even for OECD countries, it appears likely that economic activity affects R&D activity rather than vice versa. First, there is no evidence that R&D in the OECD in the early years of 1970–85 contributed to growth during the whole period. Second, the analysis of determinants of R&D activities suggests that level of income affects R&D activities; apparently R&D becomes important only after a country reaches a certain stage of development.

For developing countries, the authors' results are consistent with the widespread view, first proposed by Gershenkron, that countries that are behind grow by catching up technologically, not by advancing the technological frontier.

This paper — a product of the Office of the Director, Policy Research Department — is part of a larger effort in the department to assess the sources of growth across countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sushma Rajan, room N11-045, extension 33747 (25 pages).

1222. Trade Reform in Ten Sub-Saharan African Countries: Achievements and Failures

Faezeh Foroutan
(November 1993)

Sub-Saharan African countries, except for their enormous initial distortions and their weak administrative capacity, do not differ greatly from other developing countries in economic problems or appropriate solutions. Trade liberalization is proceeding very slowly in these countries, and its achievements promise to remain fragile for some time.

One cause of the disappointing performance of the tradable goods sector in Sub-Saharan Africa after several years of adjustment and investment of considerable resources is the less-than-exemplary implementation of reform, concludes Foroutan.

Foroutan summarizes the experience of ten Sub-Saharan countries with trade reform. Trade reform is broadly defined to encompass reform of foreign exchange and other measures (such as domestic price decontrol) that directly or indirectly affect the relative profitability of the tradable goods sector. She singles out several factors that explain the different implementation records of the countries sampled and evaluates the likelihood that reform will be sustained in the future.

Of the ten countries examined, only a few (Ghana, Tanzania, Uganda, and, to a lesser extent, Mali) began and sustained trade reform in the 1980s and 1990s. In other countries, most liberalization measures adopted were later reversed or suspended because of a balance of payments crisis or social unrest or both.

Compatible macroeconomic and exchange rate policies are ranked as most crucial for successful trade reform. Incompatible macroeconomic policies, for instance, brought about the reversal of trade liberalization in Kenya and of foreign exchange market liberalization in Nigeria. Experience in the three Franc Zone countries, especially Côte d'Ivoire and Senegal, highlights the enormous difficulty of achieving a consistent real exchange rate under the constraint of a fixed nominal exchange rate. In theory, under certain conditions a devaluation's impact on relative prices can be mimicked through equivalent tax-plus-subsidy schemes, but experience in these countries shows how administrative difficulties and price rigidity make it almost impossible to achieve this goal. In practice, experience in all countries also highlights that early attention to institutional reform, consensus building, and domestic market reform is indispensable for lasting trade reform.

Even among the few countries where trade reform has been sustained, none can yet boast of the same low levels of protection as now prevail in reforming countries elsewhere in the world. Sub-Saharan African countries' very distorted trade regimes, their weak administrative capacity, and their low levels of income all contribute to the relatively slow pace of trade liberalization in these countries.

Foroutan identifies three indicators of the sustainability of reform: the change in level and composition of government revenues and expenditures; the rate of growth of, and the diversification of, exports; and the level of investment, especially private investment in productive activities.

On the basis of these indicators, experience in the sampled countries is not promising. Few of them have radically changed the structural parameters of their economies. In most countries, government revenues are still heavily dependent on trade taxes; budget deficits have been contained, if at all, chiefly by curtailing government spending in priority areas; and little export diversification has taken place.

This paper — a product of the UNDP/World Bank Trade Expansion Program and the Trade Policy Division, Policy Research Department — is based on background papers by Gabriel Castillo, Faezeh Foroutan, Eric Fournairon, Coolibaly Kalomogo, and John Nash. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (64 pages).

1223. How Robust Is a Poverty Profile?

Martin Ravallion and Benu Bidani
(November 1993)

A case study for Indonesia shows the country's regional and sectoral poverty profile is not robust to some aspects of measurement, but quite robust to others. For many purposes, the cost-of-basic-needs method of measuring poverty is preferable to the food-energy-intake method.

Comparisons of poverty — indicating where or when poverty is greatest, for example — typically matter far more to policy choices than aggregate poverty measures, such as how many people are deemed "poor." So Ravallion and Bidani examine how measurement practices affect empirical poverty profiles. They discuss the pros and cons of alternative approaches to developing a poverty profile and use those approaches on the same data set.

In Indonesia, as in many countries, past methods of building poverty profiles have used the food-energy-intake method, defining the poverty line as the nominal consumption spending at which a person typically attains a predetermined food energy intake in each subgroup. Ravallion and Bidani argue that this method can yield differences in poverty lines (between urban and rural areas, for example) that exceed the cost-of-living differences the poor face. So, that method can mislead policy choices aimed at reducing absolute poverty.

For comparison, they explore a cost-of-basic-needs method, whereby an explicit bundle of foods typically consumed by the poor is valued at local prices, with a minimal allowance for nonfood goods consistent with spending by the poor. This approach, though not ideal, is a conceptually transparent operational alternative that can be implemented with available data They argue that this approach is more likely to generate a consistent poverty profile in that two people with the same measured standard of living — purchasing power for basic consumption needs — will be treated the same way. This refinement of past approaches retains some seemingly desirable features (such as concern for the tastes of the poor) and avoids others (such as the implicit use of a higher real poverty line in richer regions of the same country).

For Indonesia, the cost-of-basic-needs method finds more incidence, depth, and severity of poverty in rural areas, whereas the food-energy-intake method finds all measures of poverty worse in urban areas. The ranking of regions (provinces divided into rural and urban) by the two methods has virtually zero correlation. The poverty profile by principal sector of employment is less sensitive to the choice of method, particularly in urban areas.

This case study supports the conclusion that policymakers should be wary of underlying differences between methods of estimating poverty measures.

The cost-of-basic-needs approach is fairly robust to several other methodological choices, notably changes in the composition of the basic needs bundle (which determines the overall level of the poverty line), differences in the functional form of the poverty measure, and adjustment for spatial differences in prices, issues that have dominated debates on how to measure poverty. Ironically, the results of this study suggest that these issues matter less to poverty rankings (and hence to policy conclusions) than do the choices made in mapping a given specification of basic needs into monetary poverty lines.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to evaluate alternative methodologies for poverty analysis and advise on best practice. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (33 pages).

1224. Devaluation in Low-Inflation Economies

Miguel A. Kiguel and Nita Ghei
(November 1993)

Devaluation — when supported by adequate demand policies —is more effective in low-inflation economies where it is a sporadic event. In low-inflation countries, a 50-percent devaluation typically depreciates the real exchange rate by about 30 percent in the long run, without leading to a permanent increase in inflation.

In the current period of "devaluation pessimism," devaluation is often seen as an instrument to accommodate inflation instead of one to change the real exchange rate and support external balance. Kiguel and Ghei argue that such pessimism has in some cases gone too far.

The real exchange rate is an endogenous variable, and whether devaluation can change the real exchange rate depends on other factors. But devaluation is not always evil, say Kiguel and Ghei, and in some cases it can improve macroeconomic performance. It is most effective if it corrects an initial situation where the currency is clearly overvalued. In low-inflation countries, devaluation is less likely to destabilize prices because there is less indexing.

Kiguel and Ghei examine the effect of maxi-devaluation in low-inflation countries on the real exchange rate, inflation, and growth. They use a sample of 33 maxi-devaluations (20 percent or larger) in economies that had low inflation before the devaluation and where the exchange rate had remained fixed for at least three years before the devaluation. Not surprisingly, most of these episodes occurred in the 1950s and 1960s, when fixed exchange rates and inflation were the norm.

The results indicate room for devaluation optimism. The authors find that devaluation is more effective in low-inflation economies where devaluation is a sporadic event — typically, effecting a real depreciation twice as large as that in inflationary economies. In low-inflation countries, a 50-percent devaluation typically succeeds in depreciating the real exchange rate by about 30 percent in the long run, without leading to a *permanent* increase in inflation. The authors also find that growth and exports increase after devaluation. Other findings:

- Countries determined to maintain price stability after devaluation can do so.
- In countries with low inflation that have not devalued for three years, a maxi-devaluation is not likely to move the economy into high inflation. Under most of the "most likely" scenarios, inflation will increase around 3 percentage points (or 35 percent of the original rate of inflation). Under the "best" scenarios, there is an increase in inflation the year before and the year of devaluation, but inflation then falls to a level slightly higher than the level before devaluation.
- Devaluation has a favorable impact on exports.
- The shift to a more flexible exchange-rate regime was not associated with complete loss of control of inflation. In most cases, inflation went up slightly — and in only a few cases (Ecuador, Israel, Mexico, and Zaire) dramatically. But the movement toward greater exchange-rate flexibility was not associated with complete loss of control of inflation. In Pakistan and Rwanda, inflation fell, and in most countries it averaged less than 20 percent.

This paper is a product of the Transition and Macro-Adjustment Division, Policy Research Department. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Raquel Luz, room N11-059, extension 39059 (24 pages).

1225. Intra-Sub-Saharan African Trade: Is It Too Little?

Faezeh Foroutan and Lant Pritchett
(November 1993)

The low level of trade among Sub-Saharan African countries is actually slightly above what a traditional gravity model predicts.

Trade among Sub-Saharan African countries is very limited. This fact, plus other political and economic considerations, has been used to motivate a growing number of regional integration schemes.

Although many authors have shown that intra-Sub-Saharan African trade is limited, none has yet asked whether the level of intra-Sub-Saharan African trade is higher or lower than one would expect, given a plausible model of the determination of trade flows. Foroutan and Pritchett compare actual trade with what a traditional gravity model would predict.

They find that a gravity model predicts the low level of intra-Sub-Saharan African trade. For the 19 Sub-Saharan African countries in their sample, the actual Sub-Saharan African share of imports plus exports was an average (median) of 8.1 percent (4.5 percent) while the gravity model predicts a slightly *lower*, not higher, mean (median) of 7.5 percent (4.5 percent).

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to study trade patterns in Sub-Saharan Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (32 pages).

1226. Forecasting Volatility in Commodity Markets

Kenneth F. Kroner, Devin P. Kneafsey, and Stijn Claessens
(November 1993)

Methods for forecasting long-run commodity price volatility that combine time-series modeling with market expectations derived from options prices outperform forecast methods using only market expectations or only time series.

Commodity prices have historically been among the most volatile of international prices. Measured volatility (the standard deviation of price changes) has not been below 15 percent and at times has been more than 50 percent. Often the volatility of commodity prices has exceeded that of exchange rates and interest rates.

The large price variations are caused by disturbances in demand and supply. Stockholding leads to some price smoothing, but when stocks are low, prices can jump sharply. As a result, commodity price series are not stationary and in some periods they jump abruptly to high levels or fall precipitously to low levels relative to their long-run average. Thus it is difficult to determine long-term price trends and the underlying distribution of prices.

The volatility of commodity prices makes price forecasting difficult. Indeed, realized prices often deviate greatly from forecasted prices, which has led to the practice of giving forecasts probability ranges. But assigning probability ranges requires forecasting future price volatility, which, given uncertainties about true price distribution, is difficult.

One potentially useful source of information for forecasting volatility is the volatility forecasts imbedded in the prices of options written on commodities traded in exchanges. Options give the holder the right to buy (call) or sell (put) a certain commodity at a certain date at a fixed (exercise) price. Options prices depend on several variables, one of which is the expected volatility up to the maturity date. Given a specific theoretical model, the market prices of options can be used to derive the market's expectations about price volatility and the price distribution.

Kroner, Kneafsey, and Claessens systematically analyze different methods' abilities to forecast commodity price volatility (for several commodities). They collected the daily prices of commodity options and other variables for seven commodities (cocoa, corn, cotton, gold, silver, sugar, and wheat). They extracted the volatility forecasts implicit in options prices using several techniques. They compared several volatility forecasting methods, divided into three categories:

(1) Forecasts using only expectations derived from options prices.

(2) Forecasts using only time-series modeling.

(3) Forecasts that combine market expectations and time-series modeling (a new method devised for this purpose).

They find that the volatility forecasts produced by method 3 outperform the first two as well as the naive forecast based on historical volatility. This result holds both in and out of sample for almost all commodities considered.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to study the short- and long-run behavior of primary commodity prices and the implications for developing countries of movements in these prices. The study was funded by the Bank's Research Support Budget under the research project "Measurement of Commodity Price Volatility" (RPO 676-73). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faten Hatab, room H8-099, extension 35835 (22 pages).

1227. Designing Water Institutions Market Failures and Institutional Response

Marie Leigh Livingston
(December 1993)

Successful water institutions require a delicate interplay between administrative and market control. The complex challenge for water professionals is to design institutions to deal with the physical peculiarities of water in a way that establishes sensible incentives and efficient use of resources.

To foster economic efficiency, says Livingston, rights to water resources must be both secure and flexible. Designing institutions to deal with the physical peculiarities of water in a way that establishes sensible incentives and efficient resource use is complicated.

Basically, establishing security in water rights requires protecting water users against intrusion by others. This is challenging, since water users are naturally interdependent. Security does not mean that one must be guaranteed an exact amount of water all the time. Rather, it means knowing the probability of water availability and being certain about allocation procedures under changing circumstances.

Economic efficiency in water allocation in response to short-term supply changes (such as droughts) requires that economically sensitive sectors take precedence over less sensitive or more adaptive sectors. This can be accomplished through markets or administratively (by government agencies or private water user groups). In a market scheme, rights must be differentiated according to the probability of receiving water in times of shortage. Those with high-value uses can then either acquire high-probability rights permanently or negotiate an option to be exercised only in drought years.

There is less agreement among experts about how to design institutions to provide flexible water allocation in response to long-run changes in demand. Certainly no one interested in economic efficiency would suggest either a complete ban on transfers or completely unrestrained transfers. The difficulty is to ensure that water transactions allow economic development and do not impose externalities on other water users.

Market mechanisms for water transfer can entail substantial transaction costs, which threaten to delay or stymie transfers altogether. Moreover, third-party and community effects continue to concern those involved in water transfers. Local citizens and officials raise issues about the distribution of economic activity rather than its aggregate level (economic efficiency). Perhaps these issues are negligible when the amount of water transferred is small in proportion to total supply. But when the transfer threatens a community's economic base, these concerns deserve more consideration.

Successful water institutions require a delicate interplay between administrative and market control. Institutions establish the basis for markets and can assure competitive conditions. Water agencies will always be involved in allocation, given the economies of scale in centralized water management. The challenge for water professionals is to structure institutions so that they foster sound economic development.

This paper — a product of the Agricultural Policies Division, Agriculture and Natural Resources Department — is part of a larger effort in the department to provide guidance on water resources management. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cicely Spooner, room N8-039, extension 30464 (25 pages).

1228. Competition, Competition Policy, and the GATT

Bernard M. Hoekman and Petros C. Mavroidis
(December 1993)

Further moves to liberalize trade and to implement existing GATT rules and principles may have a greater impact on global competition *than would the pursuit of harmonization of* competition policy.

Hoekman and Mavroidis argue that further moves to liberalize trade and to implement existing GATT rules and principles may have a greater impact on global competition than would the pursuit of harmonization of *competition policy*.

They also suggest that current GATT rules and case law provide scope for disputes to be brought before the GATT that relate to both the application and the nonapplication of existing domestic competition laws of GATT contracting parties. This leads to *de facto* discrimination between domestic and foreign products.

Little use has been made of the GATT in this connection. Perhaps existing indirect avenues for raising competition-related disputes in the GATT should be pursued more actively. This would help identify what specific government policies might be the subject of multilateral negotiations and explicitly incorporated into the GATT framework.

This paper is a product of the Finance and Private Sector Development Division, Europe and Central Asia, and Middle East and North Africa Regions Technical Department. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Laura O'Connor, room H8-090, extension 37009 (34 pages).

1229. The Structure, Regulation, and Performance of Pension Funds in Nine Industrial Countries

E. P. Davis
(December 1993)

Company pension funds can make important contributions to retirement income and to capital market development. But they need to be regulated and supervised to avoid fraud; protect the interests of workers, and minimize restrictions on labor mobility.

Davis offers an overview of issues relating to the development of funded pension schemes in industrial countries. The analysis applies the economic theory of pension regulation to experience with the structure, regulation, and performance of funds in nine countries — Canada, Denmark, Germany, Japan, Netherlands, Sweden, Switzerland, the United Kingdom, and the United States — seeking to shed light on the finance of old age security in developing countries and the reform of pension funds in industrial countries.

The main points of the analysis are as follows:

- Pension funds are either defined benefit or defined contribution. The individual bears more risk with defined contribution plans because the pension benefit depends on asset returns. Conceptually, defined benefit funds offer better "employee retirement insurance." Private defined benefit pensions are generally available only through companies and typically include some restriction of labor mobility.
- Because of some shortcomings of fully or largely funded plans, especially for income redistribution, governments have chosen to maintain at least basic levels of pay-as-you-go social security. The scope of such unfunded social security schemes is the key determinant of the scale of private retirement saving.
- The extent to which pension funds are used as a vehicle for retirement saving depends on the regulatory regime. Tax advantages are the most important incentive, but a wide range of other regulatory choices also make pension funds more or less attractive to firms and employees. And some regulations, such as those affecting the portability of pensions, may have important consequences for economic efficiency. Though countries differ widely in their regulation of pension funds, some suggestions for good practice can still be made.
- Whether pension funds are a cost effective way of providing pensions depends on the real asset returns that can be attained, in relation to the growth of real wages. Ideally, there should be a gap of 2 to 3 percent between them. Portfolio distributions and fund management are the key determinants of returns to pension funds, subject to the returns available in the market. Prudent diversification in domestic and foreign markets and indexation of much of pension funds' portfolios both appear to be important.
- Pension funds affect capital markets in many ways. They influence market structure and demand for securities; stimulate innovation, allocative efficiency, and market development; and have a positive effect on overall saving. They may also have some deleterious effects, such as increases in volatility, "short termism," and weakening of the control exerted by investors and creditors over firms.
- Prospects for pension funds in industrial countries vary with the maturity of

existing funds and the generosity of social security benefits. In countries such as France, Germany, and Italy, growth in coming decades could be sizable.

- The key recommendations for countries that are just starting pension funds are for a mix of social security and private funds; for separate funding rather than "book reserves;" for defined benefit plans, subject to appropriate regulation; and for company-based pension funds.

The paper — a product of the Financial Sector Development Department — was prepared as background material for the forthcoming Policy Research Report on Income Security for Old Age. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Priscilla Infante, room G8-118, extension 37642 (56 pages).

1230. Unemployment in Mexico: Its Characteristics and Determinants

Ana Revenga and Michelle Riboud
(December 1993)

Although Mexico's unemployment rates, measured over a week, are low (3 to 6 percent), 15 to 20 percent of the population experiences at least one spell of unemployment over a year. Unemployment is concentrated among the young: Half the workers under 20 experience a spell of unemployment over a year, but only a tenth of workers over 30.

The restructuring of Mexico's economy has had surprisingly little effect on Mexican unemployment, which is low even in the worst years. Revenga and Riboud ask: Is the official definition of unemployment adequate? Is unemployment properly measured? And who bears its burden? Is the welfare cost of unemployment widespread or are certain population groups especially vulnerable to it, repeatedly hit by it, and therefore deserving of special attention? Is most unemployment associated with normal turnover (movements from one job to another) or with certain individuals being out of work a long time?

Revenga and Riboud address these questions using panel data from the quarterly urban labor force survey, a household-based survey of 16 urban areas, and data from the National Employment Survey carried out every two to three years. They find that:

- The structure of unemployment in Mexico is broadly similar to that in other countries. Unemployment is highest for those 16 to 25, especially women. Surprisingly, however, it is higher among secondary school graduates than among the less educated.
- Unemployment as officially measured is quite low, and has remained moderate during adjustment. Most adjustment occurred through the real wage rather than through unemployment. There has been relatively little restructuring for greater productivity.
- The official definition of unemployment leads to an underestimate of the jobless, because it ignores short spells out of the labor force transitions in and out of the labor force which are frequent.
- Using a more extensive definition of unemployment raises the rate of male unemployment for 1988 from 3.4 percent to 6.4 percent, with the greatest increases in unemployment observed for people under 20 or with little education — yielding a structure of unemployment more like the one observed in other countries.
- Age, gender, and education are key determinants of unemployment. The probability of unemployment decreases with age and education for both men and women. Marriage is associated with lower risk of unemployment for men and for more educated women, but more probability of unemployment for women with less education.
- The typical spell of unemployment is not long: a mean duration of 5.7 months for men and 7.2 months for women (which explains the higher average unemployment rate for women).
- The duration of unemployment is longer for older workers but does not vary substantially according to educational attainment. Heads of households and individuals with household responsibilities tend to exit from unemployment faster.
- Although the typical spell of unemployment is relatively short, almost 70 percent of all unemployment in 1990-91 was attributable to spells lasting at least six months, and 30 percent corresponded to spells lasting at least a year.
- Although unemployment rates, as measured over a one-week period, are low (3 to 6 percent), 15 to 20 percent experience at least one spell of unemployment over a year. Among teenagers, the proportion is highest (50 percent) while it is only 10 percent for workers over 30.

This paper — a joint product of the Human Resources Operations and Country Operations 1 and the Environment Divisions, Latin America and the Caribbean, Country Department II — is part of a larger effort in the department to study labor market issues. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rajakumari Stephen, room H3-165, extension 37040 (29 pages).

1231. Making a Market: Mass Privatization in the Czech and Slovak Republics

Nemat Shafik
(December 1993)

The mass privatization scheme put information about enterprise values in the public domain by allowing increasingly informed bidders to interact. This quickly differentiated enterprises with favorable prospects from those with unfavorable prospects. The design of the program served the objectives of speed and equity more than those of corporate governance.

Shafik assesses the Czechoslovak mass privatization program for speed, equity, and corporate governance.

The program transfe[illegible] claims on assets in 1,491 enterprises — assets worth about $10.7 billion — to the 8.5 million citizens who participated in the scheme. The entire cycle of project preparation, public information, and nationwide simultaneous bidding took 14 months. This was equivalent to privatizing more than three medium-scale and large-scale enterprises, on average, per day.

Equity objectives were achieved by transferring equal claims (equivalent to about $1,250 per person) to all participants and by putting in place a transparent and decentralized process. The government's role was simply to provide a framework and a set of rules for potential firms, managers, and shareholders to find each other.

The scheme's design — based on simultaneous sequential bidding rounds — worked to put information about enterprise values into the public domain by allowing increasingly informed bidders to interact.

The structure of ownership that emerged will have very different implications for corporate governance. Enterprises in the Czech Republic, and those that sold for high prices in the bidding rounds, are characterized by a greater concentration of shareholdings. Those in the Slovak Republic, and those that sold for lower prices, have more diffuse ownership structures.

The mass privatization scheme served to quickly differentiate the enterprises with favorable prospects from those with unfavorable prospects under current conditions. But enterprises that could have survived in some form, if they had been restructured before privatization, or enterprises that could have been viable but lacked effective governance, were sacrificed for the sake of speed and decentralization.

This paper — a product of the Country Operations Division, Central Europe Department — is part of a larger effort in the department to monitor and evaluate innovative approaches to the transition from central planning to market economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anita Correa, room H11-105, extension 38549 (56 pages).

1232. Will GATT Enforcement Control Antidumping?

J. Michael Finger and K. C. Fung
(December 1993)

GATT enforcement is unlikely to provide effective discipline over the national use of antidumping. Both the legal and bureaucratic momentum of GATT dispute settlement is toward innocuous findings — focusing on procedural errors that can be corrected without lifting the antidumping order in question.

Finger and Fung try to gauge why the GATT dispute settlement process has to date been so ineffective in disciplining the use of antidumping measures. Focusing on the five cases in which panels have completed their findings and recommendations, the authors identify the sources of this ineffectiveness and evaluate the likelihood that the process will become effective.

Changing the bureaucratic momentum of the system is possible, they contend, but would not be easy. It would require greater resolve by member countries' GATT delegates to see that GATT rules are enforced — a greater willingness to stand up to domestic pressures to bend GATT rules to suit the demands of national politics.

Changing the legal momentum of the system will be even more difficult, say Finger and Fung. Interpreting the GATT in a legalistic way compels one to interpret it as a statement of rights to impose antidumping duties. The substantive criteria for action are broad: the injury concept justifies protection for anyone to whom it is worth the time to ask for it. The constraints on antidumping actions — loopholes and procedural technicalities — are artificial, so legal reform means getting rid of them.

Where do the GATT articles on trade remedies lead? Finger and Fung contend that if you take a legalistic view, you come to a protectionist conclusion.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand how international constraints and processes (institutions) influence national trade policy choices. The study was funded by the Bank's Research Support Budget under the research project "Antidumping: Follow-up on Newly Emerging Issues" (RPO 678-16). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nellie Artis, room R2-015, extension 38010 (19 pages).

1233. Hedging Cotton Price Risk in Francophone African Countries

Sudhakar Satyanarayan, Elton Thigpen, and Panos Varangis
(December 1993)

Cotton futures can give the francophone Africa cotton-producing countries an additional instrument for risk management. Simulations show significant benefits in risk reduction.

Cotton exports account for a significant share of total commodity exports in francophone African countries, suggesting that these countries have a large exposure to volatility in cotton prices.

An analysis of the cotton marketing systems in these countries revealed that most of the price risk is borne by the parastatals and ultimately by the government. This has led to problems in years of low cotton prices when the government maintained high producer prices. In recent years, these countries introduced some flexibility in their pricing policies to deal with that problem.

As a means of managing their cotton price risk, francophone African countries have been using forward sales. Between a quarter and a third of exported cotton has been sold forward before harvesting.

Forward sales have provided only limited coverage against price risks. The use of cotton futures and options could increase this risk coverage. Futures and options contracts can also give these countries flexibility in their sales strategies.

Countries planning to privatize their cotton marketing sectors should consider the use of futures and options because forward sales are likely to decline significantly in a privatized system.

The authors examined the feasibility of using New York cotton futures and options contracts as hedging instruments and found that there were benefits of reduced price volatility. Simulations for 1989, 1990, and 1991 show in every case that hedging was effective in reducing price risk from 30 percent to 60 percent. For every 1-percent reduction in risk, the reduction in income ranged from 0 66 percent to 1.12 percent.

This paper—a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to investigate the feasibility and benefits of using risk management instruments by primary commodity producers and exporters in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Gustafson, room R2-092, extension 33714 (48 pages).

1234. Price Formation, Nominal Anchors, and Stabilization Policies in Hungary: An Empirical Analysis

Andrés Solimano and David E. Yuravlivker
(December 1993)

There is a tradeoff between faster disinflation and external competitiveness in Hungary's open economy, in which the exchange rate is used as a nominal anchor in disinflation.

Solimano and Yuravlivker empirically explore the inflationary process in Hungary. Using monthly data, they provide econometric estimates of the determinants of inflation for 1990-92.

Empirical estimates of price equations — both consumer price index (CPI) and producer price index (PPI) — show the exchange rate's quantitative importance and statistical significance in price formation in Hungary during the period of intensified reform as the economy became more open to international trade in both inputs and final goods.

Their estimates show that the money supply affects consumer and producer prices with several lags; its impact on prices is small in the short run. Nominal wages have a more significant effect on the CPI than on the PPI.

Solimano and Yuravlivker present policy simulations of alternative rules for the exchange rate and the money supply and their effect on the rate of inflation and the level of the real exchange rate. They find that a rule of fixing the exchange rate entails a lower level of CPI inflation — 5 percentage points less of CPI inflation a year — than if the rule is based only on reducing the rate of money growth (to 1 percent a month).

But a fixed exchange rate policy is associated with greater appreciation of the real exchange rate than is the policy of money-based disinflation — nearly 4 percentage points more real appreciation a year. A PPP-based exchange rate rule stabilizes the real exchange rate at the cost of a substantial acceleration in inflation.

These exercises illustrate the nature and magnitude of the tradeoffs between faster disinflation and the level of external competitiveness in an open economy such as Hungary that uses the exchange rate as a nominal anchor in disinflation.

This paper — a joint product of the Macroeconomics and Growth Division, Policy Research Department, and Europe and Central Asia, Country Department II, Country Operations Division — is part of a larger effort in the Bank to study the macroeconomics of transition. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Susana Florez, room N11-018, extension 39075 (36 pages).

1235. Eastern Europe's Experience with Banking Reform: Is There a Role for Banks in the Transition?

Alfredo Thorne
(December 1993)

The effectiveness of banks in the transition depends on how soon authorities begin to restructure the banking system and how that restructuring fits into the sequence with enterprise restructuring and privatization.

Are there lessons to be learned about how Eastern European countries have dealt with problems in their banking systems? What role have these countries assigned to banks during the transition? How have they used banks in dealing with the enterprise problem?

Thorne addresses these questions by analyzing experiences in Bulgaria, Hungary, Poland, Romania, and the former Czech and Slovak Federal Republic. Most of these countries have made substantial progress in restructuring their banking systems, but few have used their banking systems to improve the allocation of credit and hence stimulate the supply response.

Among other things, Thorne finds that:

• The problem is not whether banks hold nonperforming loans but how banks can avoid accumulating more nonperforming loans. The underlying problem is how to close loss-making and nonviable enterprises.

• The countries that have encouraged the establishment of new private banks, that have introduced regulation and supervision, and that have tried to make banks more competitive have been more successful at improving the allocation of credit and achieving more control over loss-making enterprises.

• Banks must focus on assessing risk — and for this, capital, private ownership, and adequate regulation are crucial. How quickly banks achieve independence in credit decisions depends on how fast new governance structures can be introduced. In this, the five countries have been less successful.

• The objectives of bank recapitalization should be to prevent banks from accumulating more nonperforming loans (that is, dealing with the enterprise problem) and to give them the governance structure that would prevent them from incurring new nonperforming loans. This requires introducing a system of risk and reward — by making banks comply with capital adequacy requirements, by privatizing a critical number of banks, and by introducing strong regulation and supervision.

• Governments should see that banks provide efficient payment systems, the basis for trust in banking systems.

• Introducing adequate regulation and supervision has been difficult as it requires knowing what the banks' role should be.

• Evidence strongly supports the need to recapitalize and privatize a critical number of banks.

• Authorities cannot rely on banks to exert control on enterprises early in the transition. In the early stages, control over state-owned enterprises should be exercised by a semipublic institution.

This paper — a product of the Private Sector and Finance Team, Europe and Central Asia, and Middle East and North Africa Regions Technical Department — is part of a larger effort in the Bank to extract lessons from the reform of Eastern European economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Noni Jose, room I6-230, extension 33688 (38 pages).

1236. The Impact of Two-Tier Producer and Consumer Food Pricing in India

Maurice Schiff
(December 1993)

Previous studies have claimed that two-tier producer and consumer food pricing policies lead to higher average farm prices. In fact, the impact on prices is negative in the more realistic cases. In India such a policy, designed to help the urban poor, probably hurt the farm sector as a whole, although it probably helped the rural poor in the short run.

India's government procures agricultural products such as rice, wheat, and sugar at below-market prices and sells them in both urban and rural ration shops. The rest of such crops is sold in the open market. This creates a two-tier price system for consumers and producers.

Many (including Dantwala, Mellor, and Hayami, Subbarao, and Otsuka) claim that such a policy raises the open-market price so much that it ultimately increases the average price received by farmers. If true, the gainers would be the farm sector as a whole and low-income urban consumers with access to the ration shops. Losers would be the high-income urban consumers who buy at the open-market price. This view has provided an intellectual basis for the policy.

Schiff examines a variety of cases: with and without rationing, with rationing by ration cards or by queuing, with and without the urban rich having access to the ration shops, with and without free trade, and with a marketable surplus with positive, negative, or zero price elasticity.

He finds that in most cases the policy's impact on the average price is either negative or ambiguous, and it is negative in the more realistic cases. A negative impact implies that farmers on the whole lose from the procurement policy.

But small farmers who are net buyers of the procured crops, and landless laborers, gain from a lower average price in the short run (especially if they have easy access to the rural ration shops). The long-run effect depends on the impact of the lower average price on rural employment and wages.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to examine the impact of agricultural policy on resource allocation and distribution. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (32 pages).

1237. Assessing Bank Performance and the Impact of Financial Restructuring in a Macroeconomic Framework: A New Application

Yavuz Boray and Hector Sierra
(December 1993)

It is crucial to include the macroeconomic environment in any scenario that involves assessing the financial condition of a bank and its future liability. This paper describes the development of a simulation model that permits the user to examine in detail the interaction between a financial system and its economic environment.

Boray and Sierra present a simulation model (applied here to Uruguay and implemented in Javelin) that permits analysis of the interaction between a financial system and the economic environment in which it operates. The model allows the user to compute and project the indicators necessary to monitor the performance of a financial institution and to examine how those indicators respond to economic change.

Traditionally, economic analysis in the World Bank has focused on either the "real" or "financial" sector, but rarely on the interaction between them. The introduction of the extended Revised Minimum Standard Model, or RMSM-X, reflects the Bank's recognition of the importance of incorporating the financial system into the macroeconomy.

Nevertheless, the monetary module in the RMSM-X is too aggregated to allow for any meaningful analysis of the viability of a country's financial system, or any institution in particular. By design, the RMSM-X provides only a generic framework, or "platform," that then may be adapted to particular cases.

Boray and Sierra develop a tool that uses a time series that shows developing trend lines. The model requires an adequate level of detail and a consistency of content, interpretation, and presentation of the financial and economic data, plus an adequate grouping of banks to ensure that comparisons are between like entities.

The model should be useful to financial analysts who need to plan for and forecast the growth and profits of a financial institution, or a group of institutions, and who are interested in capturing the links with the macroeconomy in a fully consistent framework. The model allows the user to compute and project indicators that are necessary to monitor the performance of a financial institution and to examine how these indicators change in response to changes in the macroenvironment. The model should also be valuable to economists interested in assessing the viability of the financial system, particularly in assessing the impact of financial restructuring. When major financial restructuring is involved, model simulations can help policymakers and supervisors to reassure themselves that bank rehabilitation is worth its costs.

This paper—a product of the Trade, Finance, and Private Sector Development Division, Latin America and the Caribbean, Country Department IV — is part of a larger effort in the region to further analyze the link between a financial system and the economic environment in which it operates. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cecilia Lim, room Q7-144, extension 30864 (61 pages).

1238. Kenya: Structural Adjustment in the 1980s

Gurushri Swamy
(January 1994)

Structural adjustment loans in Kenya have supported trade liberalization, exchange rate depreciation, and, to some extent, export development. But World Bank funds may have helped Kenya postpone critical reform of the civil service and social sectors and divestiture of parastatals.

Did the World Bank's policy-based lending to Kenya in the 1980s allow Kenya to undertake adjustment, or to postpone it? The answer is mixed, says Swamy. Success was greatest in trade liberalization (and exchange rate depreciation), and to a lesser extent in export development — and these reforms would probably not have occurred without steady Bank lending. But one could argue that budget support through funds from the International Development Association may have helped Kenya postpone critical public sector reform — in the civil service and social sectors and in divestiture of parastatals (including the National Cereals and Produce Board).

Was aid to Kenya (including the Bank's) overgenerous? Swamy concludes that, based on reform behavior and performance, Kenya may deserve aid less than Ghana (Africa's best performer) but it does not exhibit the same aid dependency as other donor favorites in the region. But its public investment program did a poor job in ranking priorities, and growing reliance on grants and counterpart funds undoubtedly contributed to more consumption spending by government, particularly on the civil service and parastatals.

Implementation of structural adjustment in Kenya was often lethargic and sometimes even contrary to stated policies, says Swamy. And despite a fairly stable political climate, commitment to the adjustment program was patchy and intermittent. Reforms ostensibly undertaken were in fact not always implemented. In principle, for example, an auction market for government paper was created, but in practice financial institutions typically took up most of that paper "by arrangement." And restrictions on movements of maize were removed but reimposed.

Moreover, the design of the structural adjustment loans appears, in retrospect, to have been faulty. Too many conditions — too general, and based on dated sectoral information — were attached to each loan, in part because of political considerations. And the Bank released credit tranches when conditions were met in letter but not in spirit.

The adjustment program benefited in the second half of the 1980s from lessons learned in the first half of the decade, particularly concerning trade liberalization and export development. But the design and dimensions of reform in the agricultural sector were too limited to achieve significant restructuring of the sector, and political interests effectively sabotaged the program. The second attempt at adjustment was also undermined by increasing financial laxity. The experience in Kenya underlines the difficulty of implementing structural adjustment under either financial laxity or extreme financial stringency.

Note, too, that many things have changed in Kenya since this study was completed in the early 1990s.

This paper — a product of the Chief Economist's Office, Africa Regional Office — is part of a larger effort in the region to study the process and impact of structural adjustment. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Vanessa Saldanha, room J10-206, extension 35742 (75 pages).

1239. Principles of Regulatory Policy Design

David E. M. Sappington
(January 1994)

Differences in the form, function, and scope of regulatory policies are traced to differences in social institutions, in the characteristics of the industries being regulated, and in the regulators' objectives and resources.

Sappington contrasts command-and-control regulation (tight control of water purification, for example) with more flexible forms, including incentive regulation (such as price cap regulation), potential regulation (providing for closer scrutiny if enough customers complain), and reactive rather than proactive policies (the firm proposing actions, the regulator saying yes or no).

He contrasts informing regulation (for example, requiring that consumers be informed about ingredients in a product) and enforcing regulation (for example, prohibiting the use of certain chemicals in foods).

He also contrasts comprehensive regulation (typical in telecommunications) and partial regulation (more typical in pharmaceuticals).

A country's institutional structure can limit the regulators' potential for commitment, he says — especially if regulators are limited in their ability to deliver rewards or penalties.

The scope and function of regulation may also be fairly limited when technological conditions allow competition to discipline producers. Sophisticated buyers with economic power may reduce the need for regulatory control, and rapid technological change can render comprehensive command-and-control regulation ineffective or debilitating.

Many forces operate simultaneously, making regulatory design a complex undertaking. Inertia is one such influence. Regulatory policies that once served an important purpose sometimes persist even though they no longer serve that purpose — sometimes because they favor a constituency that convinces the regulator to keep the controls in place. Subsidies and tariff protection often continue long past the time needed to promote the development of an infant industry, for example. When there is limited public outcry against continuing the special treatment, and the affected firms strongly urge its continuance, the regulator may be convinced to continue special treatment that no longer serves the public interest.

Regulation may also be affected by the regulators' personal ambitions. When regulators are "captured" by regulated firms — diverted from the goal of protecting consumers through the promise of personal rewards for favorable treatment of the firms — regulation may not serve society's best interests.

Even if regulators are not motivated by self-interest, their ideas of what is best for society may differ from those of other government officials or of society at large. When that happens, which goals are pursued depends largely on the autonomy regulators are granted and on the balance of power among government bodies. Regulation should be viewed in this larger context to be understood fully.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994*. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact the *World Development Report* office, room T7-101, extension 31393 (47 pages).

1240. Financing the Storm: Macroeconomic Crisis in Russia, 1992–93

William Easterly and Paulo Vieira da Cunha
(January 1994)

Stabilization of inflation during Russia's macroeconomic crisis will be a race between the authorities' willingness and ability to tighten monetary and fiscal policy and the adjustment of enterprises and households to existing inflation.

Easterly and da Cunha examine Russia's macroeconomic crisis in 1992 and 1993, focusing on fiscal and monetary policies. They show how the large transfers from the government to the enterprise sector exacerbated the crisis.

Money creation did not finance the narrow (cash) budget deficit of the government. Rather, money creation financed the huge directed credit programs aimed at specific sectors and enterprises, including assistance to other economies of the former Soviet Union to sustain Russian exports. During 1992 enterprises and households financed this effort with their large flow of savings, but while enterprises largely avoided the inflation tax, households did not.

Enterprises benefited most from the loose fiscal and monetary policies of the Russian government in 1992–93. The enterprises were net recipients of transfers from the budget and the main beneficiaries of the inflation tax (which nearly offset their own inflation tax payments).

The main losers from high inflation were households.

As many have noted, inflation in Russia correlates well with past money growth. Real money and the real exchange rate are also closely correlated.

Money demand in Russia is well above international comparisons, controlling for inflation and negative interest rates. But the trend of money demand is obviously down. Current levels of monetary financing cannot be maintained without an increase in inflation. Even if the government takes no actions that lower money demand, *it will fall anyway* as the financial system and households and enterprises adjust to inflation. Banks and enterprises are finding ways to reduce the float and excess reserves with the central bank.

Stabilization of inflation will thus be a race between the authorities' willingness and ability to tighten monetary and fiscal policy and the adjustment of enterprises and households to existing inflation.

This paper — a joint product of the Macroeconomics and Growth Division, Policy Research Department, and Country Operations Division II, Europe and Central Asia, Country Department III — is part of a larger effort in the Bank to study the macroeconomics of transition. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (41 pages).

1241. Regulation, Institutions, and Commitment in the British Telecommunications Sector

Pablo T. Spiller and Ingo Vogelsang
(January 1994)

In the past decade the United Kingdom has emerged as a pacesetter for institutional change in the telecommunications sector. Investment in the sector has jumped, despite the uncertainty one might expect from the United Kingdom's inexperience with public utility regulation, from its lack of constitutional protection against governmental and regulatory discretion, and from continuing institutional change.

In the past decade the United Kingdom has emerged as a world pacesetter for institutional change in the telecommunications sector. In particular, British Telecom has been divested, price-cap regulation has been introduced, a new regulatory institution (Oftel) has been set up (with its Director General of Telecommunications), and the market has been opened up to increasingly more competition.

At the same time, investment in the sector has jumped, despite the uncertainty that might have been created by the United Kingdom's lack of modern experience with public utility regulation, by the lack of constitutional protection against governmental and regulatory discretion, and by continuing institutional change.

Part of the reason for the investors' confidence may be the government continuity resulting from a series of Conservative election victories. But Spiller and Vogelsang emphasize the nature of British Telecom's privatization and the restraint on discretion achieved by basic features and specific details of the regulatory process.

In particular, the use of the license as an instrument to stipulate pricing and access regulations, and the use of several agencies to check on license amendments, have a strongly stabilizing influence.

Spiller and Vogelsang show how the regulatory process provides commitment even when there are personnel changes among regulators and government officials, so long as changes in government are not long-term. This commitment — based on the British courts' tradition of upholding contracts — is supported by a number of weak but mutually reinforcing pillars.

Changes in the United Kingdom's regulatory practice — such as the gradual tightening of price-cap regulations — can be interpreted largely as adaptations to increased competition and to the more favorable cost and demand conditions British Telecom faces.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger World Bank study funded by the Research Support Budget on "Regulation, Institutions, and Economic Efficiency: The Case of Telecommunications" (RPO 676-94). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (70 pages).

1242. Financial Policies in Socialist Countries in Transition

Boris Pleskovic
(January 1994)

Most transitional economies have adopted a gradual approach to reform of their financial systems, maintaining the banking system's passive role. But the financial restructuring of banks and enterprises should be undertaken simultaneously — early in the transition.

One legacy of central planning, says Pleskovic, is that the financial systems in the transitional economies are even less developed than in many developing countries. He contends that the main goal of financial reform in these economies should be to make passive financial systems active — to make financial systems participate actively in the economy, as they do in market economies.

For this to happen, the transitional economies must develop banking systems that allocate credit efficiently. Commercial banks must screen borrowers and monitor and discipline enterprises. The role of the government or the central bank should be limited to regulation and supervision.

Most transitional economies have adopted a gradual approach to reforming their financial systems, maintaining the banking system's passive role. But banking reform in Eastern Europe cannot wait for enterprise restructuring and privatization, because both banks and state enterprises are burdened with inherited bad debts that endanger their solvency and hence that of the economy.

The financial restructuring of banks and enterprises should be undertaken simultaneously, says Pleskovic, and should start early in the transition. Commercial banks should play an active role in the financial restructuring of enterprises. Governments must take responsibility (through the budget) for the debts of nonviable enterprises in a transparent manner and for the recapitalization of banks after their clean-up. Otherwise the healthy segments of the commercial sectors will have to carry the burden of financial restructuring, which will slow down the transition.

Early in the transition, attention must also be paid to improving the system of payments, demonopolizing banking, changing the structure of ownership (including privatization), and introducing market-based financial legislation.

The speed of financial reform will depend greatly on the availability of skilled banking professionals, on access to technical assistance from abroad, fiscal constraints, and of course on specific country circumstances. For example, for most countries of the former Soviet Union — except for the Baltic states — a prerequisite to successful financial restructuring is macroeconomic stabilization and the reduction of high inflation rates.

The most important lesson from countries further along in reform is that financial reform should not be delayed but should start as soon as possible. Delays reduce living standards (burdening the healthy parts of the economy with direct taxes or high financial costs), discourage small-scale entrepreneurs, inhibit the entry of new firms, and cause the economy to stagnate further.

This paper—a product of the Research Advisory Staff, Office of the Vice President, Development Economics — is part of a larger effort in the Bank to investigate the transition of economies of Eastern Europe and the former Soviet Union. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mani Jandu, room N9-037, extension 33103 (28 pages).

1243. Are Institutional Investors an Important Source of Portfolio Investment in Emerging Markets?

Punam Chuhan
(January 1994)

Major institutional investors in five industrial countries invest cautiously, and very little, in emerging market securities. But only in Germany are regulations on foreign investment a significant constraint.

Chuhan examines five major industrial countries' portfolio investment in developing countries to learn if institutional investors are significant investors in emerging developing countries.

The data reveal considerable divergence in the pattern of outward portfolio flows for the industrial countries studied.

Evidence on asset composition and discussions with market participants suggest that major institutional investors (such as pension funds and insurance companies) have tended to approach the markets for emerging developing countries cautiously. They invest only a tiny fraction of their portfolios in emerging market securities.

Chuhan finds that investor-country regulations governing outward portfolio investment were a significant constraint only in Germany.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to study the sources of private capital flows to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 31047 (37 pages).

1244. Difficulties of Transferring Risk-Based Capital Requirements to Developing Countries

Edward J. Kane
(January 1994)

Regulatory strategies that make sense for industrial countries may not be transferable, unchanged, to developing countries. But developing countries could clearly benefit from reformed supervisory technology, including improved information collection and management.

In principle, financial regulation seeks to remedy recognized deficiencies and inefficiencies in a nation's economic, political, and bureaucratic incentive structures. But the social urgency of particular financial policy problems differ according to a country's stage of development. Regulatory strategies that make sense for industrial countries are unlikely to work the same way in developing countries.

Kane examines opportunities for transferring the framework of risk-based capital requirements negotiated by the G-10 countries under the auspices of the Bank for International Settlements in Basle. He finds that an unchanged transfer of the Basle framework to developing countries is economically inappropriate and politically infeasible. And its voluntary adaptation is difficult because the long-run economic appropriateness of the Basle framework of solvency regulations directly opposes their short-run political embraceability.

Kane believes that what most urgently need to be transferred to developing countries are elements of supervisory technology: methods of information collection and management, legal processes for prompt and equitable default resolution, and mechanisms for controlling the incentive conflicts that lead bankers and government supervisors to resist the healthy exit or recapitalization of damaged institutions.

As a first step, Kane recommends that the World Bank and the Bank for International Settlements promote economically beneficial reforms in information collection and management, reforms that do not preclude flexibility in current prudential standards in individual countries.

This paper—a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to study developing country financial regulations. The study was funded by the Bank's Research Support Budget under the research project "Risk-Weighted Capital Adequacy Requirements: An Application to Developing Country Banks," (RPO 677-41). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-059, extension 37644 (28 pages).

1245. The Adding-Up Problem: Strategies for Primary Commodity Exports in Sub-Saharan Africa

Takamasa Akiyama and Donald F. Larson
(January 1994)

Policies designed to address the regional adding-up problem in Sub-Saharan Africa — such as a region-optimal export tax — generate unequal benefits among countries. Further, few countries in Sub-Saharan Africa have sufficient market power to influence commodity prices in the long run. Export taxes may prove beneficial for some countries but, at certain levels, transfer resources from smallholders to government with limited welfare gains.

Many countries in Sub-Saharan Africa remain dependent on a few primary commodities — coffee, cocoa, cotton, sugar, tea, and tobacco — for a large share of export earnings. Because demand for these commodities is price- inelastic, production and export expansion can depress world prices and hence reduce net export revenue. Akiyama and Larson discuss the effects of this phenomenon — the adding-up problem — on policy and development strategies for major agricultural export commodities in Sub-Saharan Africa.

They conclude that, as a practical matter, it is not feasible to design a regional commodity production and trade policy for Sub-Saharan Africa as a whole because of the difficulty of equitably distributing the benefits of such a policy. Moreover, if an export tax is imposed on Sub-Saharan Africa as a whole, the greatest benefits may go to producers in other regions such as Asia and Latin America.

Individually, few countries in Sub-Saharan Africa have sufficient market power to influence commodity prices in the long run. Possible exceptions include Côte d'Ivoire (in cocoa) and to a lesser extent Ghana (in cocoa), Kenya (in tea), and Malawi (in burley tobacco). Export taxes may prove beneficial for these countries but, at certain levels, the primary effect of "optimal" taxes is to transfer resources from smallholders to governments with limited marginal welfare gains.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to assess policy effects on international trade. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Kim, room R2-042, extension 33715 (41 pages).

1246. Determinants of Cross-Country Income Inequality: An "Augmented" Kuznets' Hypothesis

Branko Milanovic
(January 1994)

An alternative hypothesis to explain why income inequality differs among countries. Inequality in richer societies decreases not only because of economic factors but also because societies choose *less inequality as they grow richer.*

Why does income inequality differ among countries? Using a sample of 80 countries from the 1980s, Milanovic shows that two types of factors explain variations in income inequality.

The first are factors that are, in the short term, independent of economic policies and are included in the standard formulation of the Kuznets' curve: the level of per capita income and the country's regional heterogeneity. From the viewpoint of economic policy, these are "given" factors, resulting in a "given inequality."

The second group of factors are the *social-choice factors* reflected in the size of social transfers and of state sector employment, both of which reduce inequality. For this sample, the reduction amounts to about a quarter of "given" inequality.

The importance of social-choice factors rises as the level of income rises. The divergence between actual inequality and the inequality predicted by the standard Kuznets' curve therefore systematically widens as a society develops.

The discrepancy is systematic, Milanovic contends. Inequality in richer societies decreases not only because of economic factors but also because societies *choose* less inequality as they grow richer.

This paper — a product of the Transition Economies Division, Policy Research Department — is part of a larger effort in the department to study determinants of income distribution and poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (62 pages).

1247. Complex Transactions Under Uncertainty: Brazil's Machine Tool Industry

Andrew Stone
(January 1994)

Despite intense economic and policy uncertainty and slow courts, Brazilian machine tool firms can conclude complex contracts with customers. The new institutional economics helps explain how.

Drawing on the new institutional economics, Stone's study of Brazil's machine tool industry extends an earlier study of the garment industry in two ways.

First, it broadens the original study to a second industry, which could either confirm or amend the original conclusions.

Second, it looks at the effect of economic uncertainty and expensive formal means of resolving conflict on an industry where enforceable contracts appear necessary for normal business transactions. The machine tool industry is characterized by longer-term contracts and by commitments of resources to products that could not easily be sold to another customer (asset specificity).

More formalistic approaches to law and development would suggest that only a legal system that enforces promises in a "knowledgeable, sophisticated, and low-cost way" would allow transactions in this industry (Williamson). By contrast, the new institutional economics looks at other means of governing agreements — including what Oliver Williamson describes as "bilateral efforts to create and offer hostages."

The results show that, while the Brazilian machine tool industry has suffered from a reduction in protection and the effects of a turbulent macroeconomic environment, long-term contracts for specialized equipment are unexpectedly secure.

Responses to an enterprise survey show that problems with formal conflict resolution rank low, although the machine tool industry is characterized both by greater compliance with formal rules and by greater reliance on specific, long-term contracts than the garment industry. In fact, machine tool firms report a higher rate of customers honoring orders and making timely payments than do garment firms.

Compliance is indeed assured by a sort of "exchange of hostages." The supplier's hostage is the irretrievable investment of physical and human capital in a product difficult to sell to another customer. The customer's hostage is the specific technology bound up in the machine being produced and a payment system that ensures a substantial sunk investment in the machine by the time of delivery.

The only attribute of contracts that is frequently renegotiated is the indexation of payments, motivated by macroeconomic instability. Qualitative evidence suggests that this process adds substantially to transaction costs. Not surprisingly, machine tool producers, like their counterparts in the garment industry, place a high priority on a more stable macroeconomic and policy environment.

This paper — a joint product of the Private Sector Development Department and the Finance and Private Sector Division, Policy Research Department — is part of a larger effort in the Bank to promote a realistic assessment (through firm-level surveys) of constraints on private sector development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-059, extension 37644 (17 pages).

1248. Do Domestic Firms Benefit from Foreign Direct Investment? Evidence from Panel Data

Brian Aitken and Ann Harrison
(February 1994)

It seems that technology gains from foreign investment are captured entirely by joint ventures.

Many developing countries now actively solicit foreign investment, offering foreign firms subsidies, tax holidays, and exemptions from import duties. One justification for subsidizing these firms is the so-called spillover of technology from foreign to domestic firms.

Using panel data — following more than 4,000 Venezuelan firms from 1975 through 1989 — Aitken and Harrison explore two aspects of the effect of foreign direct investment.

First, they examine the relative performance of joint ventures and domestic firms. They find that increases in foreign equity participation are strongly correlated with increases in plant productivity.

Second, they measure the impact of joint ventures and foreign subsidiaries on plants with no foreign investment. Facing fewer data limitations than in previous studies, they find that foreign investment negatively affects the productivity of domestically owned plants.

These results suggest that whatever technology gains occur through foreign investment are captured entirely by joint ventures.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to examine the determinants and consequences of foreign investment at the micro level. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (42 pages).

1249. Competitiveness and Environmental Standards: Some Exploratory Results

Piritta Sorsa
(February 1994)

Restricting trade to compensate for differences in environmental standards is unlikely to improve competitiveness in environmentally sensitive industries. Higher environmental spending has had no noticeable effect on trade performance, so protection will not solve problems of noncompetitiveness. The reasons for good or poor performance are likely to lie elsewhere.

Contrary to common perceptions, higher environmental standards in industrial countries have not tended to lower their international competitiveness, Sorsa contends. There has been little systematic relationship between higher environmental standards and competitiveness in environmentally sensitive goods (those that incurred the highest pollution abatement and control costs in the U.S. in 1988).

Among Sorsa's findings about what determines trade flows in environmentally sensitive goods:

- Environmental spending has been a small share of total spending — so it is unlikely on its own to have caused shifts in comparative advantage in most industries.
- Differences in environmental spending among industrial countries seem to have been minor.
- Environmental spending has been concentrated in a few basic industries under heavy pressure to structurally the international division of labor.
- Energy use and environmental spending are closely linked.
- Positive adjustment and increased comparative advantage in environmentally sensitive goods were more pronounced in countries where environmental policies encouraged investment rather than current spending.

The costs of environmental standards depend not only on physical characteristics but also on the policies chosen. The reductions industrial countries have achieved in the main pollutants differ greatly across countries. In the United States, which has some of the highest private environmental spending (as a share of GDP), investments have been a declining share of spending. The United States also has some of the lowest reductions in abatement, which may mean that it has succeeded less than other countries in internalizing environmental costs.

Compliance with higher environmental standards is not a zero-sum game. Higher environmental standards to reduce the social cost of pollution is a new source of permanent structural change. Countries that adjust early and invest in environmental protection technology can maintain and even create comparative advantage in environmentally sensitive industries.

Private costs incurred to reduce the social cost of pollution may, apart from the social benefit of lower pollution, also bring private benefits. Adjustment can mean shifting to producing less pollution-intensive goods. Pressures toward this end are likely to increase as environmental awareness becomes more common.

Instead of lobbying for protection, industries struggling with environmental spending should lobby for better environmental policies — that is, policies and standards that encourage efficient abatement. Demands for protection because of differences in environmental spending are likely to be counterproductive and to retard adjustment toward a new way of competing. Eco-dumping duties could do little for the environment but much harm to the trading system.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze the links between trade and the environment. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Pauline Kokila, room R2-066, extension 33716 (35 pages).

1250. Explaining Miracles: Growth Regressions Meet the Gang of Four

William Easterly
(February 1994)

Large positive residuals, such as those associated with the high performance of the Four Tigers, have historically been transitory. The stratospheric trajectory of the Four should be heading back toward earth soon.

Easterly examines a range of cross-sectional variation in performance and policies for evidence on what distinguishes successes from failures.

At about 6 percent, the growth rates of the Four Tigers — Hong Kong, the Republic of Korea, Singapore, and Taiwan (China) — are among the largest outliers in any study of growth. This is not surprising, says Easterly. The Four Tigers are Tigers *because* their growth rate was high. The Four generally have large positive residuals in growth regressions, but Easterly argues that this is not surprising for observations that were known in advance to be at the top of the sample.

But growth regressions and, more generally, quantitative measures of "policies" are not very successful at picking out the Gang of Four as "most likely to succeed." Most observers before the "miracle" were pessimistic about East Asia.

The Four are not nearly as superlative in policies and other country characteristics as they are in per capita growth rates.

Large positive residuals such as those associated with the Four's high performance have historically been transitory. The stratospheric trajectory of the Four should be heading back toward earth soon, says Easterly.

What may be unusual about the Four's success is that they were all in one region. At least casually, the Asian successes look a lot like growth radiating from poles, with Japan followed by the Gang of Four, followed by China, Thailand, Malaysia, and Indonesia.

The great success of the Gang of Four does not imply a blanket endorsement of all their policies — they may have made mistakes that were more than offset by other good policies and, probably at least in part, by good luck.

It is disturbing how large and transitory the unexplained element is in economic success. Perhaps the best way to think about good policies is that they make success *likely* sooner or later.

When all is said and done, the story of the East Asian successes is consistent with the prosaic fundamentals: investment, education, financial depth, and low budget deficits. In these areas, the Four were above average.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — was presented at NBER's fourth Annual East Asian Seminar on Economics in San Francisco in June 1993. The study was funded by the Bank's Research Support Budget under the research project "How Do National Policies Affect Long-Run Growth?" (RPO 676-66). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (39 pages).

1251. Excise Taxes

John F. Due
(February 1994)

Once a country has developed substantial domestic production — beyond agricultural commodities and those subject to traditional excises — there are strong arguments for moving to a sales tax rather than continuing to add excise taxes.

Due contrasts excise taxes with sales taxes, consumption taxes, licenses, stamp duties, and other indirect taxes. He describes different types of excises, their relative tax burdens, and how progressive and economically efficient they may be.

The main argument for traditional excise taxes, he says, is that they yield substantial revenue with relatively little complaint. A second justification is that the cost of the excessive use of commodities is borne by the purchasers, not by society at large. A third argument is to penalize people for a commodity's use (especially popular with commodities such as alcohol).

Arguments against traditional excises: They tend to be regressive, because of the low income elasticity of demand, and they place an unequal burden on families at given income levels. They deprive families of the funds for milk and other essential items, without reducing consumption of taxed goods. High rates tend to increase smuggling and illicit production, often of inferior, even dangerous, substitutes. And the case for them is not strong, resting as it often does on moral grounds. But excise taxes are sure to continue as they yield revenues and are generally more acceptable than other sources of revenue, such as income taxes.

Taxes on motor fuel and related motor vehicle levies are among the three most productive excises. They are justified as a charge for the use of roads, in lieu of tolls. In western Europe, they are seen as progressive, as reaching the people most able to pay — and incidentally as reducing road congestion. Criticism of such taxes centers on how best to attain desired goals — for example, sorting out the relative burdens on light and heavy vehicles.

Luxury excises tend to be applied to commodities and services with a high income-elasticity of demand, the assumption being that they will reach the people best able to pay them — achieving equity without relying on increased income taxes, which are difficult to enforce in developing countries and hurt incentives. A luxury excise tax, limited to certain items, is viewed as being progressive, which a sales tax rarely is.

But if various rates apply, compliance and administration become complex, and consumers may discriminate among closely related commodities. Moreover, the goods taxed are often widely used by lower income groups (sugar and kerosene are prime examples). For these reasons, many countries are introducing sales taxes, with few rates or a single rate (with exemptions), with simplified processing, and with less ambiguity about what is or is not taxed.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to develop policy options to reform fiscal systems in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (38 pages).

1252. On the Dangers of Decentralization

Rémy Prud'homme
(February 1994)

Demand for decentralization is strong in most parts of the world. This close look at the negative side effects of improperly applied decentralization is not an attack on decentralization but an effort to prevent its misapplication — and to promote fuller understanding and wiser use of this potentially desirable policy.

Prud'homme highlights some of the dangers of decentralization:

- The benefits of decentralization in allocative efficiency are not as obvious as suggested by the standard theory of fiscal federalism. The assumptions of this theory are fragile.
- These doubtful benefits might carry a cost in production efficiency, but more empirical research is needed on this point. What is not doubtful is that decentralization runs counter to redistribution and stabilization.
- Decentralization makes redistributive policies, whether interpersonal or interjurisdictional, more difficult, if not impossible.
- Decentralization also makes macroeconomic stabilization programs more difficult to implement because subnational government fiscal policies can run counter to national policies. Serious drawbacks or potential drawbacks should be considered in designing any decentralization program.

The arguments Prud'homme develops make it easier to understand some of the real choices. These choices are not so much whether to decentralize in general but rather what functions to decentralize — in which sectors, and in which regions. Guidelines can be provided on this.

Often, the problem is not so much whether a certain service should be provided by a central, regional, or local government, since the service often has to be provided with the intervention of all three levels of government. The real challenge is how to organize the joint production of the service.

Decentralization refers simultaneously to a state and to a process. The virtues and dangers of decentralization are often discussed simultaneously for both concepts. This is a dangerous confusion because decentralization is path-dependent. What is desirable in a given country at a certain point in time depends on the present state of decentralization and the speed at which it has been reached.

Much more work, particularly empirical work, is needed — in reviews of decentralization (or centralization) experiences in general, as well as those encouraged or supported by the World Bank.

This paper — a product of the Transport Division, Transportation, Water, and Urban Development Department — is part of a larger effort in the department to investigate options for improving the management of public infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact TWUTD, room S6-027, extension 31005 (36 pages).

1253. Can Competition Policy Control 301?

J. Michael Finger and K. C. Fung
(February 1994)

Competition policy is not an antidote to 301. To preserve the economic benefits of the open international trading system, it may be necessary to regress to a more primitive legal and political system.

Should fair trade rules be replaced by national or international competition rules? A familiar argument for doing so is that more rigorously enforced competition standards might eliminate the basis for the burgeoning number of antidumping cases of recent years.

A less familiar argument is that the implementation of internationally agreed competition standards might reduce the frequency with which the U.S. government uses section 301 of U.S. trade law. Section 301 lists foreign government toleration of systematic anticompetitive activities as one of the bases for taking retaliatory action against foreign exporters.

Finger and Fung found that of 82 "301" actions taken from 1975–92, in only three was the uncompetitive clause the basis for the complaint.

The authors found that a number of additional disputes involved allegations of foreign uncompetitive practices but were taken up through other mechanisms; extraterritorial application of U.S. antitrust law or direct negotiations sometimes capped by an understanding at the presidential level. These negotiations often included the threat of initiation of antidumping, "301," or other trade remedies cases. (The structural impediments initiative negotiations with Japan are the most familiar example.) In several of these cases, the foreign government agreed to and implemented more rigorous antitrust enforcement, but these actions seldom ended the dispute. The U.S. government pressed on for tangible evidence of increased U.S. export sales.

Finger and Fung conclude that removing the basis for these disputes -- alleged lax enforcement of competition policy -- did not remove the motive for them -- increased U.S. exports. Competition policy then is not the antidote for "301."

The last section of the paper reviews the compatibility of "301" with the preservation of open international trading system. Of 70 "301" cases (through December 31, 1992) that have led to policy changes, 52 have led to liberalizations, and only 18 have led to increased trade restrictions. Viewed from the point of view of results, the major shortcoming of "301" is that the United States is the only country whose policies do not come under its scrutiny.

This paper — a product of the Trade Policy Division, Policy Research Department — was prepared for discussion at a research seminar on "Approaches to Competition Policy in International Trade," held in St. Gallen, Switzerland, in September 1993. The study was funded by the Bank's Research Support Budget under the research project "Antidumping: Follow-up on Newly Emerging Issues" (RPO 678-16). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva Pateña, room R2-040, extension 39515 (45 pages).

1254. What Are OECD Trade Preferences Worth to Sub-Saharan Africa?

Alexander J. Yeats
(February 1994)

The proposed Uruguay Round reductions in most-favored-nation tariffs will cause some African exports to be displaced by other suppliers. Aggressive reform of the African countries' own trade regimes appears to be the most effective way to counter the effects of the erosion of OECD preferences.

Some developing countries may experience *important trade losses* if tariffs are liberalized on a general most-favored-nation (MFN) basis. Sub-Saharan Africa appears to be especially vulnerable to this problem.

African countries receive important Lomé Convention preferences in the European Economic Community (EEC), under which duty-free treatment, or tariffs below MFN and generalized system of preference (GSP) rates, are applied to their exports. Other OECD countries normally apply GSP duties, or even more advantageous "least developed" country preferences to African exports.

The proposed Uruguay Round reductions in MFN tariffs will *erode those tariff preference margins* and cause some African exports to be displaced by other suppliers.

Yeats documents the importance to African countries of existing OECD preferences, particularly those of the EEC. More than 95 percent of all African-tariff-line products shipped to the EEC receive duty-free treatment, while other exporters of the same products face tariffs as much as 20 percentage points higher.

Similar favorable terms of preferential access also exist in Japan and the united States, although the preference margins are smaller than in the EEC.

Using a trade projection model developed by the World Bank and UNCTAD, Yeats estimates that eliminating EEC, Japanese, and U.S. MFN tariffs would cause African export losses of about $4 billion (estimated present value). The countries that seem to be most vulnerable to these adverse trade effects are Côte d'Ivoire, Ethiopia, Kenya, Malawi, Senegal, Uganda, and Zimbabwe.

What about the possibility that the losses African countries could experience from erosion of tariff preferences could be offset by the liberalization of nontariff measures? Yeats discounts this likelihood.

In general, few important OECD nontariff measures are applied to African products — most African textile and clothing exports are even excluded from Multifibre Arrangement restrictions. And those that are applied (such as eco-labeling or licensing requirements) do not restrict trade very much.

Yeats' observations accent the need for actions to offset the impact of Africa's loss of preferences as a result of the Uruguay Round. What offsetting actions are possible and appropriate? Aggressive reform of the African countries' own trade regimes appears to be the most effective way to counter the effects of the erosion of OECD preferences.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze and predict structural changes in trade and to identify factors affecting the exports of developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jean Jacobson, room R2-075, extension 33710 (27 pages).

1255. Intrahousehold Resource Allocation: An Overview

Lawrence Haddad, John Hoddinott, and Harold Alderman
(February 1994)

Unitary models of household behavior are expedient for policymaking, but the costs of neglecting the collective nature of household decisionmaking and the process of intrahousehold allocation are often high.

The policy failures associated with inappropriate acceptance of unitary models of household behavior are more serious than those associated with inappropriate acceptance of collective models, contend Haddad, Hoddinott, and Alderman.

They support this claim with illustrations. Consider, for example, the effect of public transfers made to households. The unitary model predicts that the impact of such transfers is unaffected by the identity of the recipient because all household resources are pooled. With the collective model of the household, the welfare effects of a transfer may be quite different if the recipient is a man, say, rather than a woman.

Most of their arguments for the policy relevance of model choice are based on the failings of the unitary model rather than on the strengths of a particular collective model. As a set, collective models may resolve some of the anomalies that have accrued under the unitary model, but further work is necessary to improve their predictive power.

The authors admit to raising more questions than answers — which they regard as positive, considering that a conference in the late 1980s focused on whether it was even worthwhile going inside the "black box" of the household.

The response to that question was that it was worthwhile examining household behavior, but few more definite answers have emerged, for three reasons. First, by their nature, the results of gender and intrahousehold analyses are specific to cultures and difficult to generalize, although the process of analysis can be generalized. Second, there is a lack of consensus about which conceptual model of the household to use, both across and within social science disciplines. And third, the collection of many intrahousehold data sets is not driven by policy questions.

The challenge, the authors say, is to produce generalizable results useful for policy formulation. In that regard, it seems desirable to apply a common conceptual approach to the analysis of policy-oriented case studies from a regionally diverse set of countries.

Hypotheses about these studies could be developed and tested with and without the benefit of intrahousehold information to carefully measure the tradeoffs between the additional project and policy insights derived (and mistakes avoided) and the extra burdens of the analysis itself.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to monitor the impact of policy on poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (89 pages).

1256. World Fossil Fuel Subsidies and Global Carbon Emissions in a Model with Interfuel Substitution

Bjorn Larsen
(February 1994)

World subsidies of fossil fuels are estimated at more than $210 billion. Removing such subsidies would reduce global carbon emissions by 7 percent.

Larsen presents a simple empirical framework for estimating the level of world fossil fuel subsidies and analyzing their implications for carbon dioxide emissions. Larsen extends Larsen and Shah (1992) by applying a simple model with interfuel substitution, using a more detailed sectoral data set that includes energy prices and consumption for an expanded sample of countries.

Larsen concludes that substantial fossil fuel subsidies prevail in a handful of large carbon-emitting countries. The fiscal implications for some countries are significant — as much as 10 percent of GDP in some countries.

World subsidies are estimated to be more than $210 billion, or 20 to 25 percent of the value of world fossil fuel consumption at world prices.

Removing such subsidies, Larsen estimates, would reduce national carbon emissions by more than 20 percent relative to baseline emissions in some countries. It would reduce global carbon emissions by 7 percent.

This paper — a product of the Public Economics Division, Policy Research Department — is an extension of Policy Research Working Paper 1002, "World Fossil Fuel Subsidies and Global Carbon Emissions," by Bjorn Larsen and Anwar Shah, October 1992. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (24 pages).

1257. Old-Age Security in Transitional Economies

Louise Fox
(February 1994)

Pension reform has proved even more contentious an issue than privatization during the former communist countries' transition to a market-based economy.

The formerly communist countries in Eastern Europe and Central Asia (EECA) are undertaking their second great social experiment of the century: the transition from authoritarian central planning to a market economy. One of the many problems they face during the transition is what to do with their pension systems. Their problems are more complex than countries elsewhere at the same income level for three reasons. First, the systems are mature, with high and sharply rising dependency ratios. Second, pension coverage is more extensive than in most other middle-income countries, because of overindustrialization and the collectivization of agriculture. Third, pension reform is being undertaken at the same time as other fundamental economic changes. The timing, sequence, and political economy of pension reform are complex.

Fox reviews the main feature of existing EECA pension systems, identifies the major reform issues and reform options, discusses obstacles to reform, and proposes a sequence for reform. She focuses primarily on the richer, older European countries of the EECA, where pension systems have matured.

Paradoxically, pensions are low in those countries, yet expenditures as a proportion of GDP are high. The main reason for this is the very low age of retirement, which means a short contribution period and a high dependency ratio. EECA governments must bring spending promises in line with a more realistic revenue ceiling.

What makes reform so difficult is that too many people have already retired. Especially during the transition, when there are few opportunities to acquire wealth and some intergenerational redistribution is needed, the retirees need a safety net, whether or not they deserve one on the basis of age alone. Fox's recommendations are designed to make the system more equitable and efficient for this group.

Four years after the fall of the Berlin Wall, pension reform has been elusive in EECA despite the severity of the problem. Fox identifies several reasons for this. First, the extent of the pension system crisis was not foreseen in the early days of the transition (except perhaps in Hungary). Indeed, some countries expanded entitlements to help induce the labor market to adjust. As the depth of the problem became clear, EECA countries have tried to formulate reform programs, but only Albania has passed legislation substantially reducing entitlements.

Another reason reform has proved difficult in EECA countries is that governments have tried to reduce the scope of the public pillar without providing an alternative to assure old-age security. Failure to begin developing other pillars (based on savings and insurance principles) to meet the active generation's needs for old-age security may have doomed reform efforts from the start.

This paper is a product of the Poverty and Human Resources Division, Policy Research Department. The study was funded by the Bank's Research Support Budget under the research project on "Income Security for Old Age: Conceptual Background and Major Issues" (RPO 677-45). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Elfreda Vincent, room N5-053, extension 82350 (43 pages).

1258. Decentralizing Infrastructure: For Good or for Ill?

Richard Bird
(February 1994)

Decentralization — or rather the realization that the optimal decisionmaking structure in the public sector is almost certainly noncentralized (polycentric) — may in principle yield a more efficient and equitable pattern of infrastructure investment and use than the overcentralized and unresponsive public sector found in many developing countries. But it will do so in practice only if it is properly implemented along the lines sketched in this paper.

Bird examines the many faces of infrastructure decentralization: the costs and benefits, the government structure (constraint or variable?), the "polycentric" approach, and how to make decentralization work (for whom?). He proposes basic principles and guidelines for policy design, for both small projects and large.

Broadly, these guidelines are summed up in a few propositions:

• In all countries, some critical infrastructure is provided through a decentralized political structure. Current trends make that likely to be more true in the future.

• Decentralization, however defined, in and of itself has no necessary implications for good or evil so far as infrastructure is concerned: its effects depend on the incentives various decisionmakers face.

• The key to ensuring that these incentives are conducive to "good" decisions (about design, siting, timing, finance, pricing, operation, maintenance, and use of infrastructure) is to ensure that those who made the decisions bear the financial (and political) consequences, as much as possible.

• Politically, this means that political leaders at all levels should be responsive and responsible to their constituents, and that those constituents are fully informed about the consequences of all decisions. Making politicians bear the consequences of their own mistakes is as close as one can get to a "hard" political budget constraint.

• Economically, it must be difficult for local residents to shift costs to nonresidents who do not receive benefits and to make local decisionmakers fully responsible to their citizens for the use they make of revenues collected from them (through local taxes), to users of infrastructure (local or otherwise) for the use made of the revenues they contribute (through user charges of various sorts), and to taxpayers in general for the use made of any transfers (or subsidized loans) they receive.

• Administratively, what such a system requires is a clear set of "framework" laws (on local budgeting, financial reporting, taxation, contracting, dispute settlement, rules to be followed in designing user charges, and so on), as well as adequate institutional support for localities to operate in this environment.

To the extent that these conditions are not met, the perverse incentives that too often exist because of the structure and finance of the public sector in many countries will probably be exacerbated by the current tendency to decentralize more and more decisions in the public sector.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994* on infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact the *World Development Report* office, room T7-101, extension 31393 (34 pages).

1259. The Reform of Fiscal Systems in Developing and Emerging Market Economies: A Federalism Perspective

Robin Boadway, Sandra Roberts, and Anwar Shah
(February 1994)

A framework for allocating taxing and spending responsibilities to various levels of government and for designing fiscal transfers to foster decentralized decisionmaking while preserving or even enhancing equity and efficiency goals.

Boadway, Roberts, and Shah review experiences with fiscal federalism in industrial countries and present a framework for a reform of fiscal systems in developing and transition economies. They indicate how the benefits of decentralized decisionmaking in a federal system can be achieved in a manner consistent with the objectives of national efficiency and equity. Among their suggestions:

• Decentralization can be made compatible with national objectives through conditional grants, regulation, or coordinated decisionmaking.

• The federal government should assume primary responsibility for providing national public goods and services, for efficiency of the internal common market, for redistributive equity, for external relations, and for macroeconomic policy.

• State governments should be responsible for subnational public goods and services, for the delivery of quasi-private goods and services (such as education, health, and social insurance), for fiscal equity among municipalities, and for overseeing local government decisionmaking. Local governments should be responsible for purely local services.

- Where jurisdiction for a public service is shared, the roles of the various levels of government should be clarified.
- Accountability should be hierarchical, with the federal government responsible for overall policy and standards, and lower levels of government with the actual delivery of services and infrastructure. In some cases, asymmetric decentralization may be the preferred option, especially where jurisdictions differ greatly in size and population.
- Efficiency and equity must be considered in assigning taxes. Efficiency considerations suggest centralizing taxes applied on more mobile bases (such as taxes on capital income and on trade). Equity considerations suggest centralizing progressive income taxes and transfers to persons as well as taxes on wealth and wealth transfer and on resource rents.
- States could use excise taxes or general sales taxes if levied on a single-stage basis; if a multistage sales tax is used, it is best administered centrally. States could also obtain revenues from piggybacking on the federal income tax provided a harmonized system is maintained. Municipalities should use property taxes, user fees, and licenses.
- Tax and expenditures assignment must be supplemented by a system of fiscal transfers, both because the desirability of greater decentralization of expenditures than of taxes will give rise to fiscal imbalances and because transfers are a necessary instrument for achieving efficiency and equity in a decentralized federation.
- In a decentralized federation, fiscal inefficiencies and fiscal inequities will occur because states will not deliver comparable sets of services at comparable tax rates. Eliminating these differential net fiscal benefits requires a set of equalizing unconditional transfers, possibly combined with a more general revenue-sharing scheme.
- Matching conditional grants are useful for internalizing the spillover of benefits from state public spending to residents of neighboring states. More important is the use of federal-state conditional grants as a means for the federal government to achieve national efficiency and equity objectives while allowing public service delivery to be decentralized.
- In transition economies, framework laws on property rights, corporate legal ownership and control, bankruptcy, and financial accounting and control are not fully developed. This should be a high priority. The lack of local administrative experience, institutions, and competence should not be used as an excuse for not decentralizing responsibilities. If necessary, transitional funding and training should be provided.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to reform intergovernmental fiscal relations in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (67 pages).

1260. When Is a Life Too Costly to Save? Evidence from U.S. Environmental Regulations

George L. Van Houtven and Maureen L. Cropper
(March 1994)

Are the amounts spent to save a life under U.S. regulations acceptable to U.S. citizens? Or should those amounts be made more explicit to encourage public debate on health and safety regulation? To the second question, the authors say, "Yes."

Except for two relatively minor statutes, U.S. environmental laws do not permit the balancing of costs and benefits in setting environmental standards. The Clean Air Act, for example, prohibits the Environmental Protection Agency (EPA) from considering costs in setting ambient air quality standards. Similarly, the Clean Water Act does not allow consideration of benefits in setting effluent standards. When the EPA *is* allowed to balance benefits against costs, it has considerable discretion in defining "balancing."

Van Houtven and Cropper ask two questions: Whether allowed to or not, has the EPA balanced costs and benefits in setting environmental standards? Where has the EPA drawn the line in deciding how much to spend to save a statistical life?

Their answers are based on data about the costs and benefits of regulations involving three classes of pollutants: cancer-causing pesticides used on food crops (1975–89); carcinogenic air pollutants (1975–90); and all uses of asbestos regulated under the Toxic Substances Control Act. These are their findings, in brief:

- The EPA behaved as though it were balancing costs and benefits in its regulation of pesticides under FIFRA and of asbestos under TSCA, the two so-called balancing statutes. The higher the cost of the ban, the less likely the EPA was to ban the use of these products. The greater the number of lives saved, the more likely the EPA was to ban their use.
- But the amount the EPA was (implicitly) willing to spend to save a life was high: \$52 million to prevent cancer among pesticide applicators, and \$49 million to avoid cancer through exposure to asbestos.
- The value the EPA attached to saving a life was higher for workers than for consumers. The value attached to avoiding a case of cancer through exposure to pesticide residues on food was less than \$100,000, in contrast with the \$52 million value of preventing cancer among pesticide applicators — perhaps because workers are exposed to higher levels of pollution than consumers.
- After 1987, when the Natural Resources Defense Council sued the EPA for considering costs in setting emissions standards for vinyl chloride, the EPA considered costs in setting emissions standards only after an acceptable level of risk was achieved.
- Ironically, before the vinyl chloride decision, the value per cancer case avoided was only \$15 million. The amount the EPA was willing to sp d to save a life was thus less under the Clean Air Act than under the balancing statutes. But after this decision, the EPA did not consider costs at all if the risk of cancer to the maximally exposed individ .l was above one in 10,000.

This paper — a .roduct of the Environment, Infrastructure, and Agriculture Division, Policy Research Department — is part of a larger effort in the department to see what lessons can be learned about efficient control of pollution by examining the U.S. experience with environmental regulation. The study was funded by the U.S. Environmental Protection Agency through Cooperative Agreement CR–818454–01–0. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Marañon, room N10-033, extension 39074 (34 pages).

1261. A Political-Economy Analysis of Free Trade Areas and Customs Unions

Arvind Panagariya and Ronald Findlay
(March 1994)

A customs union is more effective than a free trade area for diluting the power of interest groups.

Panagariya and Findlay analyze the welfare effects of regional integration in a model of endogenous protection.

They show that introducing preferential trading leads to an increase in protection against countries outside the preferential trading area. Moreover, the important Meade result of preferential trading breaks down in the presence of endogenous protection.

According to the Meade result, if excess demands exhibit net substitutability, the introduction of preferential trading is welfare-improving. In the presence of endogenous protection, because preferential trading is accompanied by increased protection against nonpartners, its effect on welfare is ambiguous.

Panagariya and Findlay also compare free trade areas and customs unions. They provide the first formal treatment of the argument that a customs union is a more effective instrument for diluting the power of interest groups than is a free trade area.

Under a customs union, the tariff available to one country becomes available to all countries in the union. This introduces a free-rider problem in lobbying and all lobbying takes place in one country.

The lobby chooses a lower (common) external tariff under a customs union than under a free trade area. This means that welfare in the country where lobbying takes place is higher under a customs union than under a free trade area, although the same may not hold true for the other country. The level of the common external tariff declines as the number of members in the union increases.

Therefore, the larger the number of partners in a customs union, the more likely it will improve the welfare of member countries. But, because of the free-rider problem, lobbies are likely to resist the enlargement of the customs union.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand the economics of regionalism. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nellie Artis, room R2-015, extension 38010 (25 pages).

1262. Flexibility in Sri Lanka's Labor Market

Martin Rama
(March 1994)

Not all labor regulations in Sri Lanka are distortive, but the Termination of Employment of Workmen Act does reduce firing and hiring. Repealing the Termination of Employment of Workmen Act would facilitate restructuring in the regulated sector and reduce the average spell of unemployment.

Sri Lanka has had double-digit unemployment rates for more than a decade. And by 1990, 85 percent of the unemployed had spent more than a year searching for a job. Rama analyzes whether high unemployment rates and long spells of unemployment are the result of profuse legislation of the labor market or of market imperfections that would have prevailed even without government intervention.

He shows that not all of the labor market regulations currently in force are highly distortive. Despite minimum wages set by wage boards, and despite collective bargaining, real wages are neither too high nor too rigid. And despite the freedom of unions, labor relations are peaceful in the private sector.

A mismatch of skills is only marginally relevant, says Rama. Unemployment is better understood as the outcome of job search in a significantly heterogeneous job market.

It is worth remembering that Sri Lanka is a partially closed economy, in which many import-competing activities are greater than they should be, because of protection. Rama concludes that it is necessary to repeal the Termination of Employment of Workmen Act to avoid the massive destruction of jobs in those activities, should foreign trade be further liberalized. Many firms in the protected sectors would have to restructure and shut down some of their product lines. By being prevented from doing so, these firms might just go bankrupt, and many more jobs would be lost as a result.

Relaxing restrictions on retrenchment would unambiguously increase the turnover rate, says Rama. There would be both more hiring and more firing. The unemployment rate would increase in the short run but the average spell of unemployment would be shorter. This would help solve the explosive problem of unemployed youths.

This conclusion does not apply to tea plantations, given the few alternative sources of employment for the Indian Tamil workers and given ethnic obstacles to their labor mobility.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand the impact of labor market policies and institutions on economic performance. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (28 pages).

1263. The Effects of Barriers on Equity Investment in Developing Countries

Stijn Claessens and Moon-Whoan Rhee
(March 1994)

Legal and other barriers limit foreign investors' access to emerging stock markets. Empirical evidence suggests that countries could lower the (risk-adjusted) cost of capital by removing formal barriers to such access.

Equity flows to developing countries climbed to an estimated $13 billion in 1992, four times the amount invested three years earlier. Investment increased partly because countries removed restrictions on foreign ownership, liberalized capital account transactions, and generally made foreign access to their markets easier.

Claessens and Rhee investigate how stock performance in emerging markets is affected by foreign investors' formal access to stocks (as measured by the International Finance Corporation's index of "investability").

To measure foreigners' access to emerging-market stocks, they use the investability index created by the IFC's Emerging Market Data Base. The IFC indexes should be a good indicator of changes in legal barriers over time or of the relative importance of those barriers across securities in one market at a given point in time, or across markets.

Using the Stehle (1977) model, Claessens and Rhee reject the hypothesis that emerging markets are integrated with world capital markets (for most emerging markets). They fail to reject the hypothesis that emerging markets are segmented (for all emerging markets).

Claessens and Rhee interpret this as legal and other barriers limiting foreign investors' access to emerging markets. They next investigate the relationship between stock performance and the investability index to determine the importance of legal barriers relative to other barriers.

They find a strong relationship between a stock's price-earnings ratio and its investability index, which suggests that formal barriers to foreigners' access has a negative effect on stock prices and thus raises the cost of capital for firms listed. Countries could lower the (risk-adjusted) cost of capital, they contend, by removing legal barriers to foreign investors' access to equity markets.

This paper — a product of the Debt and International Finance Division, International Economics Department — was prepared for the NBER conference on "Internationalization of Equity Markets," held in San Francisco in October 1993, and will be forthcoming in the conference volume published by the University of Chicago Press. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faten Hatab, room H8-087, extension 35835 (40 pages).

1264. A Rock and a Hard Place: The Two Faces of U.S. Trade Policy Toward Korea

J. Michael Finger
(March 1994)

Current U.S. trade policy is domestic policy first and trade policy only secondarily. The importance of trade remedies and "301" in U.S. policy means that it is no longer most-favored-nation, but tailored to the politics and economics of each bilateral relationship. Its primary concern is to protect the interests of individual domestic constituents. What happens to foreigners is hardly more than fallout.

U.S. trade policy since the 1980s has been quite different from trade policy in the first two or three decades after World War II. Until the 1970s, U.S. trade policy was dominated by systemic concerns. Trade policy actions were subject to the discipline of constructing an open, stable, and nondiscriminatory system.

In contrast, for the past 10 or 15 years the main objective of trade policy actions has been to respond to the demands of various domestic constituents for greater access to foreign markets, or for reduced foreign access to the U.S. market.

When systemic concerns were strong, they helped discipline the actions the U.S. government would take to advance the interest of a particular constituent. But now, these constituent-supporting actions *are* U.S. trade policy.

To state the same point another way, the current objective of U.S. trade "policy" is to respond to each constituent's plea for the application of this or that regulatory instrument (antidumping, "301," and so on) — to respond in a way that will win that constituent's vote. "Policy" is now no more than a generic label for the accumulation of these responses.

Finger describes the accumulation of these responses. He tabulates U.S. trade actions in the 1980s, paying particular attention to actions against Korea. While Korean economic interests were advanced by restrictions on Korea's and other countries' exports of steel to the United States and the European Union (EU), the outcome, judged globally, was probably negative. Rent transfers to Korean and other exporters are, on a global basis, transfers from U.S. and EU users, and hence net to zero. That leaves only the efficiency effects, which David Tarr estimates to add up to a global loss of about $36 million a year, based on prices and the size of the industry in 1984.

The underlying theme, says Finger, is that these actions have no unifying discipline except to respond in a politically acceptable way to constituent pressures. These are responses to the politics and economics of specific situations, not the automatic or hands-off extension of nondiscriminatory standards that the still-popular rhetoric of a "rules-based" system would suggest.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand how the trade policies of industrial countries affect developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva Pateña, room R2-040, extension 39515 (38 pages).

1265. Parallel Exchange Rates in Developing Countries: Lessons from Eight Case Studies

Miguel A. Kiguel and Stephen A. O'Connell
(March 1994)

Although a case can be made for using a dual exchange rate system as a temporary option for dealing with a balance of payments crisis, experience shows that it does not work well in practice. Often it is used as a way to postpone the necessary macroeconomic adjustment instead of reducing its costs.

In parallel (dual) foreign-exchange markets — extremely common in developing countries — a market-determined exchange rate coexists with one or more pegged exchange rates.

Kiguel and O'Connell report the main lessons from a World Bank research project on how these systems work, based mainly on case studies in Argentina, Ghana, Mexico, Sudan, Tanzania, Turkey, Venezuela, and Zambia.

On the whole, the experiences were disappointing. Most countries tolerated high premiums for long periods, which harmed the allocation of resources and growth. The studies indicate no clear gains from prolonging a dual system.

The case for a dual foreign exchange system is stronger when the system is adopted as a temporary option to deal with a severe balance of payments crisis. Argentina, Mexico, and Venezuela resorted to a dual system at the time of the debt crisis, to smooth out the devaluation in the exchange rate to achieve the needed real depreciation. This helped to maintain limited control over domestic inflation, and avoided a sharp drop in real wages while protecting the balance of payments. In the longer term, not much was gained.

In the cases studied, the dual system was misused more often than not: it was used too long and the premium was higher than it should have been. Venezuela, for example, used the system for six years with an average 120 percent premium, Mexico for five years (average 30 percent), and Argentina for eight years (average 44 percent). In Argentina and Venezuela, the dual system was used to avoid macroeconomic adjustment while protecting international reserves. It is doubtful the macroeconomic gains (in terms of keeping equilibrium in the balance of payments and lower inflation) were greater than the costs in terms of misallocation of resources.

In Ghana and Tanzania, the dual exchange rate system was prolonged to maintain overvalued real exchange rates and expansionary macroeconomic polities. The large premium in those countries (at times more than 1,000 percent) shows the dramatic inconsistency between exchange rate policy and monetary and fiscal policies.

On determinants of the parallel exchange rate, the evidence indicates that macroeconomic fundaments (such as fiscal deficit, credit policies, and so on) matter most. In the short run the premium is driven by expectations about the evolution of these macroeconomic factors.

Overall, in the countries examined in the project, the existence of a parallel foreign exchange market generated fiscal losses. These losses resulted because the public sector was a net seller of foreign exchange at the official exchange rate. This means that unification has some pleasant fiscal arithmetic.

The experience with unification indicates that it usually takes place at the parallel exchange rate. Most countries unified to a crawling peg system, though some opted for floating exchange rates. Successful unification to a fixed exchange rate was less frequent, and it required strong adjustment in fiscal and monetary policies. Regarding speed, unification was quick in countries where the parallel system was used temporarily, and gradual in those where the system existed for long periods and with a tradition of widespread foreign exchange controls.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand macroeconomic adjustment. The study was funded by the Bank's Research Support Budget under the research project "The Macroeconomic Implications of Foreign Exchange Markets in Developing Countries" (RPO 675-30). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Raquel Luz, room N11-059, extension 34303 (39 pages).

1266. An Efficient Frontier for International Portfolios with Commodity Assets

Sudhakar Satyanarayan and Panos Varangis
(March 1994)

Including commodities and assets from emerging equity markets in investment portfolios produces significant risk / return benefits.

In recent years, the role of investment funds has increased in most commodity markets. Investment funds, which traditionally deal with financial markets, have been shifting between financial markets and commodity futures markets, as well as among commodity futures markets.

The popularity of investing in emerging capital markets is as high as it has been since World War I. By 1913, nearly half of a typical equity portfolio was invested in emerging markets. Today, one in every four dollars invested in foreign equity markets goes to emerging markets.

Both commodity futures and emerging capital markets are growing in popularity because they allow risk reduction through portfolio diversification.

Satyanarayan and Varangis analyze the benefits of including commodity futures and assets from emerging markets in an investment portfolio.

They also try to calculate the opti al composition of assets. The calculated optimal weights show that a considerable proportion of an investment portfolio could be invested in commodity futures and emerging market assets. The weights calculated are higher than those funds usually used, signifying the potential for further expansion of these assets in a portfolio.

Finally, including commodity futures and assets from emerging markets in investment portfolios produces a significant risk/return benefit.

This paper — a product of the International Trade Division, Policy Research Department — is part of a larger effort in the department to explore the role of commodities as assets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Gustafson, room R2-092, extension 33714 (30 pages).

1267. The Tax Base in Transition: The Case of Bulgaria

Zeljko Bogetic and Arye L. Hillman
(March 1994)

Economies in transition may be better off not imitating the tax structures of mature western market economies. Lower taxes and strong administration with well-publicized penalties for evasion may be the best route to a broader, more equitable tax base that increases revenue without reducing incentives for private enterprise.

The transition from socialism characteristically reduces existing tax revenues at the same time that it increases the need for government spending. An increasing need for revenue combined with an eroding tax base creates a transition-related fiscal gap and a challenge for tax policy.

The solution, say Bogetic and Hillman, is not to lay a heavier tax burden on new private firms. The issue is how to meet revenue needs *without* inhibiting private sector development. Large-scale tax evasion in the private sector — the de facto outcome in Bulgaria and in many other transitional economies — may be a good incentive for development of private enterprise, but it is illegal and inequitable to wage-earners and salaried workers .

The chief means of increasing tax revenue are to (1) reduce tax rates to decrease the benefit of evasion, (2) improve tax administration (to increase tax coverage and better detect evasion), and (3) increase penalties for evasion. These three measures effectively decrease the benefits and increase the cost of tax evasion to economic agents.

It takes time to improve tax administration, however. Given administrative limitations, what should the tax structure be? Bogetic and Hillman contend that an administratively feasible system designed to encourage development of the private sector during the transition should:

- Be simple, not complex or oversophisticated.
- Be administratively implementable with current resources.
- Impose a low tax burden on all economic agents.
- Rely on broad tax bases with minimum exemptions.
- Begin the long-term improvement of tax administration.
- Limit the severity of tax penalties in

the transition from an authoritarian to a democratic regime.

In theory, reducing the cost of compliance and increasing the expected cost of noncompliance should reduce tax evasion and increase tax revenues. In practice, small businesses and self-employed citizens tend to evade taxes, providing an effective zero tax base. The government has little to lose from reducing taxes on the self-employed but, to be equitable, it should reduce taxes for everyone. As a general rule, say Bogetic and Hillman, economies in transition should impose *lower* tax burdens than are imposed in mature western market economies. Low tax rates may counter the traditional lack of trust in government by citizens in formerly socialist economies. It may also reduce the perception of "exploitation" by giving the impression of a more modest government consistent with the dynamic private sector led economy.

This paper — a product of the Country Operations 1 Division, Europe and Central Asia, Country Department I — is part of a larger effort in the region to study public finance issues in southern European countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faith Smith, room H5-247, extension 36072 (33 pages).

1268. The Reform of Mechanisms for Foreign Exchange Allocation: Theory and Lessons from Sub-Saharan Africa

Eliana La Ferrara, Gabriel Castillo, and John Nash
(March 1994)

The paper provides an analysis of the mechanisms for foreign exchange allocation used in trade policy reform and an assessment of their effectiveness. The case is strong for avoiding delay in moving to full currency convertibility in dismantling or modifying foreign exchange controls. Movement to a unified free market for exchange would be facilitated by changes in policies and in donor practices, so exchange can be channeled through private sellers.

Administrative exchange allocation has been common in developing countries, especially in Sub-Saharan Africa. Steps to dismantle or modify these control mechanisms have been carried out through transitional schemes. La Ferrara, Castillo, and Nash draw lessons from Sub-Saharan Africa's historical experience useful both to African and former socialist economies:

- Exchange regime reform should be given highest priority for its role in reducing anti-export bias. Although many Sub-Saharan countries have attempted to reform their allocation mechanisms, only a few have made the transition to market allocation (virtually convertible currency, at least on the current account). Failure to do so is the major shortcoming of most adjustment packages.
- Both gradual and rapid approaches have succeeded. On purely economic grounds (given the problems of such intermediate steps as auctions), speed is preferable but it is not always politically or institutionally feasible.
- The transition must be accompanied by a coherent set of fiscal and monetary policies and a willingness to allow the exchange rate to seek a true market-clearing level.

Some lessons regarding the specific mechanisms, discussed in approximate order of their proximity to convertibility, are as follows:

The most rudimentary transition mechanism is the *own-funds scheme*, which is no more than a beginning of reform. Own-funds schemes should be accompanied by liberalization of the rules governing exports, or illegal exports and the black market premium may increase.

Export retention schemes can minimize the adverse effects on exporters of foreign exchange shortages, reduce the implicit export tax, and fund a legal private exchange market. But the retained funds must be saleable, the retention rates substantial, and traditional exports must be included to adequately fund the legal private exchange market.

Open general licensing (OGL) and similar schemes can be a useful intermediate step in liberalizing import and exchange allocation regimes. But in practice the benefits are limited by two features. First, consumer goods competing with local production, whose imports were restricted the most, have usually been excluded, at least initially. Moreover, OGL has no endogenous price-setting mechanism for the exchange rate. The OGL rate should generally be connected to, but lower than, the parallel rate.

An *auction* incorporates a pricing mechanism, which is an important advantage. But the pricing mechanism must be allowed to work, which has not always been the case. Auction rules should be clear (should not allow discretionary disqualification of bids, for example), should minimize participation costs, and allow wide participation. Marginal, rather than the more common Dutch, pricing system is preferred. The use of a reservation price may reduce volatility but may also impede the full disbursement of funds.

The shortcomings of transitional schemes to dismantle or modify foreign exchange controls become more important the longer they are in place. A strong case can be made for avoiding delay in moving to full currency convertibility.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to examine problems in adjustment in Sub-Saharan Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nellie Artis, room R2-015, extension 38010 (59 pages).

1269. Union-Nonunion Wage Differentials in the Developing World: A Case Study of Mexico

Alexis Panagides and Harry Anthony Patrinos
(March 1994)

Overall, the union-nonunion wage gap is 10.4 percent. Unionized women and indigenous people earn more than their nonunion counterparts, and the collective bargaining strength of organized labor in the northern states is considerably weaker than elsewhere in the country.

Union-nonunion wage differentials have been extensively studied by labor economists, but for lack of data on the developing world the study has been confined largely to the industrial world. This paper is one of the first attempts to empirically examine those differentials in a developing country.

Panagides and Patrinos find that union-nonunion wage differentials in Mexico have many of the same attributes and show many of the same patterns as those in industrial nations. But there are marked differences.

Based on a household survey in 1989, Panagides and Patrinos find that:

- Overall, the union-nonunion wage gap is 10.4 percent.
- Unions have a positive impact on the

earnings of employed women and indigenous people.

• Organized labor in Mexico's northern states is considerably weaker in collective bargaining strength than it is elsewhere in Mexico.

This paper — a joint product of the Human Resources Operations Division, Latin America and the Caribbean, Country Department II, and the Education and Social Policy Department — is part of a larger effort in the Bank to investigate labor markets and labor market institutions in developing economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Ian Conachy, room S10-022, extension 33669 (35 pages).

1270. How Land-Based Targeting Affects Rural Poverty

Martin Ravallion and Binayak Sen
(March 1994)

Under ideal conditions, and not allowing for administrative costs, redistribution from land-rich to land-poor households would reduce poverty in rural Bangladesh by only a small amount. By itself, land-based redistribution would be an inadequate attack on rural poverty.

Transfers to the rural land-poor are widely advocated and used in attempts to reduce rural poverty. Such transfers are believed to be productive, in that the final gain to the poor exceeds the initial transfer. The evidence cited most often to support this view is the negative correlation between output per acre and the size of the holding. In other words, small farms appear to be more productive.

There are reasons to question that evidence, however, say Ravallion and Binayak Sen. It is unclear, for example, how much differences in productivity are really attributed to unmentioned differences in land quality (someone might be given a larger plot of poor land so that a living can be made from it). Other factors also constrain the impact on poverty of land-based targeting, notably incentive constraints (whereby the "land-rich" alter their behavior to gain from the policy) and political economy constraints (whereby the land-rich undermine the policy by creating political pressure for tradeoffs).

To inform the debate, Ravallion and Sen quantify the *potential* gains from land-based targeting under seemingly ideal conditions, incorporating only a limited set of constraints on such a policy. Their aim is to quantify gains to the poor from a benchmark policy designed to characterize the probable upper-bound on real-world outcomes.

A key constraint on such schemes is that targeting is done on the basis of landholding class alone. Ignoring productivity differentials, the relevant indicator in making transfers is a suitably defined poverty measure for each landholding class.

The more general formulation Ravallion and Sen offer calls for two indicators: the marginal productivity of transfers (assumed to be proportional to current output per acre on owned land) and a poverty measure (derived from a standard poverty profile).

After applying this approach to new data for rural Bangladesh, they find that landholding class is a relevant indicator for targeting. Under ideal conditions, redistribution from land-rich to land-poor households will reduce aggregate poverty in rural Bangladesh (even without productivity effects). And transfers from an external budget would have the greatest impact on poverty if they were concentrated on landless, marginal farmers. Moreover, productivity effects (consistent with the relationship between farm size and productivity in Bangladesh) imply an additional impact on rural poverty when transfers are made from land-rich to land-poor households.

But the gains are modest, even if one postulates virtually unheard-of powers of redistribution across landholding classes. Depending on the initial conditions of agricultural technology, and the relative productivity effects among the landless, they estimate that the *maximum* impact on rural poverty from land-based targeting under revenue neutrality is equivalent to a uniform lump-sum transfer of between Tk 10 and Tk 20 per person per month — or between 2.5 percent and 5 percent of rural mean consumption.

This is under ideal circumstances, putting aside the constraints mentioned, and with no consideration for administrative costs. Real-world circumstances will entail even less impact on poverty. One must hope, for the sake of Bangladesh's poor, that targeting the land-poor with such redistribution is not all that is done to attack rural poverty.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to provide policymakers with better information on the likely benefits to the poor from targeted schemes for fighting poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (34 pages).

1271. Measuring the Effect of External Shocks and the Policy Response to Them: Empirical Methodology Applied to the Philippines

F. Desmond McCarthy, J. Peter Neary, and Giovanni Zanalda
(March 1994)

How can the governments in Eastern European and developing countries reduce their vulnerability to such shocks? What are appropriate policy responses? Here is a method for measuring the effect of external shocks on the current account, applied to the Philippines.

Economies benefit from international trade, but joining the world market also exposes them to external shocks. How can the governments in Eastern European and developing countries reduce their vulnerability to such shocks? What are appropriate policy responses?

McCarthy, Neary, and Zanalda examine how external shocks (such as commodity price changes, variations in global demand, and fluctuating interest) affect economic performance, and how those effects are mitigated by the right policy responses at the right time.

They introduce a methodology for measuring the effect on current account of external shocks and apply it for the Philippines. They rationalize balance of payments responses to external shocks and domestic policies in a theoretical model of a small open economy.

Did the Philippines choose the appropriate policies when faced with balance of payments disequilibrium?

Among comparable Asian countries, the Philippines in 1970 enjoyed a relatively high per capita income that has since failed to keep pace. Why?

Adverse shocks did not help, but other countries in the region experienced similar shocks and performed better. The Philippines relied heavily on external flows, which fueled an investment boom.

Given low real interest rates at the time, this seemed a reasonable approach — but there were two flaws to it.

First, the investments were poorly conceived, were mismanaged, failed to produce appropriate returns, and became a burden on the state. One large nuclear power plant has yet to yield a return.

Second, with so many external resources available, the government ignored the need for meaningful structural reform, especially in trade and public sector finance. Inefficient allocation of public resources and distortionary trade policies can absorb more than all the gains from favorable shocks.

When external conditions improved in the mid-1980s, the Philippines could not take advantage of them because of its heavy external debt and its cumbersome trade regime. Had authorities introduced structural reform (liberalizing trade, strengthening public finance, and freezing up factor markets), the economy could have more easily absorbed the impact of unfavorable shocks.

In 1991, the IMF gave the Philippines a stand-by credit. Authorities are now addressing some structural problems by liberalizing the exchange rate, removing import tariffs, and restructuring the public sector, including the Central Bank. Perhaps this will allow more sustainable growth and an economy that can more readily absorb external shocks.

This paper — a product of the Office of the Vice President, Development Economics — is part of a larger effort in the Bank to analyze external shocks, policy response, and economic performance. The study was funded by the Bank's Research Support Budget under the research project "Economic Shocks and the Global Environment" (RPO 677-75). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mila Divino, room S9-049, extension 33739 (47 pages).

1272. The Value of Superfund Cleanups: Evidence from U.S Environmental Protection Agency Decisions

Shreekant Gupta, George Van Houtven, and Maureen L. Cropper
(March 1994)

The U.S. Environmental Protection Agency (EPA) has considered both cost and permanence in choosing among alternatives for cleaning up contaminated soil. But the EPA is willing to pay large sums to incinerate contaminated soil rather than cap it or put it in a landfill. Are the benefits of incineration worth it?

Under the Superfund law, the U.S. Environmental Protection Agency (EPA) is responsible for inspecting hazardous waste sites and for putting those with the most serious contamination problems on a national priorities list. The EPA then oversees the cleanup of these sites, suing potentially responsible parties for the costs of cleanup when possible, and funding the cleanup of "orphaned" sites out of the Superfund, money raised taxing chemical and petroleum products.

The Superfund program is controversial. Cleanups are costly and it is unclear whether the benefits of cleanup, especially the relative benefits of more permanent cleanup, are worth the costs. At many sites, imminent danger of exposure to contaminants can be removed at low cost. What raises the cost of cleanup is the decision to clean up the site for future generations — to incinerate contaminated soil, for example, or to pump and treat an aquifer for 30 years.

To shed light on this debate, the authors infer the EPA's willingness to pay (or have others pay) for more permanent cleanups at Superfund sites. They do so by analyzing cleanup decisions for contaminated soils at 110 Superfund sites.

They find that, other things being equal, the EPA was more likely to choose less expensive cleanup options. But, holding costs constant, the EPA was more likely to select more permanent options, such as incinerating the soil instead of capping it or putting it in a landfill. The EPA was willing to pay at least twice as much for onsite incineration of contaminated soil as it was for capping the soil.

Has the EPA chosen more permanent Superfund cleanups in areas where residents are predominantly white and have high incomes? The authors find no evidence that the percentage of minority residents near a site influences the choice of cleanup selected. But offsite treatment was more likely at sites with higher incomes.

This paper — a joint product of the Pollution and Environmental Economics Division, Environment Department, and the Environment, Infrastructure, and Agriculture Division, Policy Research Department — is part of a larger effort in the Bank to promote efficient pollution control in developing countries by examining the U.S. experience with environmental regulation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Marañon, room N10-033, extension 39074 (33 pages).

1273. Desired Fertility and the Impact of Population Policies

Lant H. Pritchett
(March 1994)

Desired levels of fertility account for 90 percent of differences across countries in total fertility rates. Reducing the demand for children — for instance by giving girls more education — is vastly more important to reducing fertility than providing more contraceptives or family planning services.

Ninety percent of the differences across countries in total fertility rates are accounted for solely by differences in women's reported desired fertility. Using desired fertility constructed from both retrospective and prospective questions, together with instrumental variables estimation, it is shown this strong result is not affected by either ex-post rationalization of births nor the dependence of desired fertility on contraceptive access or cost. Moreover, despite the obvious role of contraception as a proximate determinant of fertility, the additional effect of contraceptive availability or family planning on fertility is quantitatively small and explains very little cross country variation. These empirical results are consistent with theories in which fertility is determined by parent's choices about children within the social, educational, economic, and cultural environment parents, and especially women, face. They contradict theories that assert a large causal role for expansion of contraception in the reduction of fertility.

This paper — a product of the Office of the Vice President, Development Economics — is part of a larger effort to investigate the impact of population policies. An edited version of this paper will appear in the March 1994 volume of the *Population and Development Review*. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (85 pages).

1274. The New Trade Theory and Its Relevance for Developing Countries

Asad Alam
(March 1994)

The new trade theory provides new rationale for government intervention in trade. But a host of economic and political economy criticisms and certain identifying features of developing countries severely undermine its relevance for developing countries.

Recent developments in trade theory — the result of applying models that embody imperfect competition and increasing returns to scale — suggest an activist role for government in trade policy and threaten to undermine the case for trade liberalization.

But the new modelling of international trade lacks theoretical robustness. It is particularly sensitive to assumptions about competitive behavior and the number of firms. Economists' criticism also focuses on the size of the excess profits that oligopolistic firms are alleged to earn, the partial equilibrium nature of the analysis, and the identification of the market failure and the choice of instrument.

The normative prescriptions that arise from the new trade theory are also criticized in terms of political economy issues: the potential for foreign retaliation, inefficient government intervention, special interests' capture of policy, the problem of moral hazard, and possibly inimical redistributive effects.

The limits of the new trade theory are particularly acute for developing countries because of their small economies, their limited ability to shift profits, the nature of their trade, and the greater chance for special interests to capture trade policy. Paradoxically, empirical work has shown that the gains from trade are much bigger under imperfectly competitive markets which actually strengthens the case for trade liberalization.

This paper — a product of the Africa Regional Office, Office of the Chief Economist — is part of a larger effort in the region to understand the application of recent trade-theoretic developments to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Asad Alam, room J6-095, extension 87380 (28 pages).

1275. Female-Headed Households, Poverty, and the Welfare of Children in Urban Brazil

Ricardo Barros, Louise Fox, and Rosane Mendonca
(March 1994)

Female-headed households — a growing segment of Brazilian households — are a heterogenous group that defies stereotyping. While most are not poor, a large number of the poor, especially children, live in these households. The most effective antipoverty intervention is to focus on raising the income of the working women in these households. Special effort is also needed to encourage children in these households to stay in school.

Barros, Fox, and Mendonca analyze the characteristics and behavior of households headed by women in urban Brazil and identify some of the consequences for child welfare on the growth of these households. Among their findings:

• Households headed by women are a heterogeneous group, which varies strongly by region — as does the extent of poverty among them. Such households are more common in the northeast and increase with urbanization.

• Households headed by women are not, on average, a "vulnerable group" in Brazil, as some are quite well off. The subset of such households that are very poor is quite vulnerable. Households headed by women tend to be poorer in the northeast, especially around Recife, than in Porto Alegre in the south, where there is virtually no gap.

• Less than half the households headed by women contain dependent children, and only a third are headed by the stereotypical "single mother." When there are children in households headed by women, especially households headed by single mothers, the income gap is greater than in other households.

As a proportion of households in Brazil, households headed by women and containing children represent only 3.4 percent of urban households, but this group tends to be poor, which is worrisome for child outcomes. Poor children tend to live in households headed by women.

These households are poor not because there are more children or fewer adults but because women earn less than men. Women heading households do not earn less than other women — on the contrary. However, if female heads of households earned as much as male heads of households, the average income in households headed by women would be above that for other households and fewer single mothers would be poor.

The best interventions to eliminate poverty in this group are those that focus on:

• Ending wage discrimination.

• Ending occupational segregation.

Interventions that focus on raising skill levels and educational attainment for the whole workforce, including women, would also help alleviate absolute poverty, although not necessarily relative income differences. "Workfare" or public employment policies would not help this group since most already participate in the labor force.

Programs targeted to this group would not be particularly progressive, given the heterogeneity and income spread among these households. But the results do suggest the need for special interventions for children in households headed by women, given those children's tendency to stay out of school.

This paper — a product of the Office of the Director, Policy Research Department — is part of a larger effort in the department to analyze behavioral characteristics of vulnerable groups. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jim Lynch, room H2-120, extension 33114 (46 pages).

1276. Is There Persistence in the Growth of Manufactured Exports? Evidence from Newly Industrializing Countries

Ashoka Mody and Kamil Yilmaz
(March 1994)

Asymmetry in the income elasticity of demand, and the observed persistence of exports, suggest that long-term buyer-supplier relationships lead to the creation of "insiders" and "outsiders" in the world market for manufactured goods — a condition that tends to perpetuate itself.

Price and income elasticities estimated from a country's export demand function are used both to predict and to prescribe effective export strategies. But the focus on elasticities has led to the neglect of an important empirical regularity: a strong persistence in the growth rate of a country's exports.

Mody and Yilmaz shift the spotlight to this phenomenon and describe the degree and pattern of persistence.

They find that a country's exports are influenced not only by the elasticities, but also by the quality of its transactional infrastructure (proxied by the penetration of telecommunications).

More important, when world income rises, exports rise relatively uniformly for different country groups. As world income contracts, the decline in exports is greater and is especially sharp for certain countries.

Mody and Yilmaz infer from this asymmetry in income elasticity of demand, and from the observed persistence of exports, that long-term buyer-supplier relationships lead to the creation of "insiders" and "outsiders" in the world market for manufactured goods, a condition that tends to perpetuate itself.

This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to study the factors which directly or indirectly affect the export performance of less developed countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva Pateña, room R2-040, extension 39515 (43 pages).

1277. Private Trader Response to Market Liberalization in Tanzania's Cashew Nut Industry

Steven Jaffee
(March 1994)

Since 1991, the Tanzanian government has moved to liberalize the market for cashew nuts to reverse a long-term decline in this important traditional export industry. Although the liberalization process has been confusing and nontransparent, and although problems of logistics, finance, and protected vested interests remain, some positive results are evident — and the future prospects for the recovery of the industry and for the returns to participating farmers and traders are favorable.

Between World War II and the early 1970s, Tanzania developed one of the world's largest cashew nut industries. In 1973–74, marketed production reached 145,000 tons (about 30 percent of world production), with cashews providing an important source of income to some 250,000 farmers and being the country's fourth largest source of foreign exchange. This trade was originally developed and organized by private traders (of Indian and Arab origin), although in the 1960s a multitiered marketing system — involving local cooperative societies, regional cooperative unions, and a marketing board — was imposed, with private traders gradually removed from the marketing system.

Despite a buoyant international market, Tanzania's cashew nut industry underwent a steady and massive decline through the 1970s and 1980s. Jaffee examines the factors that contributed to this downward spin: Tanzania's villagization program, a decline in real producer prices, and inefficiencies in cooperative and marketing board crop collection and downstream activities. With the decline in production, living standards in the main cashew-growing regions worsened, and most of the large-scale, donor-funded, government-owned processing factories became "white elephants."

With the industry on the brink of collapse, in 1991 the government announced the liberalization of the cashew nut market, permitting private firms to once again buy and sell the nuts. According to Jaffee, the reform process has been characterized by confusion, uncertainty, and latent government controls and interventions, though the industry shows some signs of recovery. Based on a recent survey, Jaffee examines the liberalization process — including its implementation at the national and local levels, the private sector response to renewed trading opportunities, and the resultant patterns of competition, price discovery, and marketing channel formation.

The liberalization experience in Tanzania's cashew nut industry offers interesting insights for other Sub-Saharan African countries where uncertainty remains about the appropriate roles (if any) for marketing boards in liberalized markets, about the ability of cooperatives to compete in such markets, and about the ability of indigenous firms to take advantage of the new trading opportunities.

In Tanzania, neither the cooperatives nor the marketing board have fared well in the liberalized market. Although a relatively large number of private traders have recently entered into cashew buying and selling, successful entry into export marketing has proven viable only for a small number of companies. Their characteristics: medium to large in scale, diversified across commodities, involved in trading and agroindustry, not indigenous, and with strong financial and trading links abroad.

This paper — a product of the Agricultural Policies Division, Agriculture and Natural Resources Department — is part of a larger effort in the department to assess the division of responsibilities between the public and the private sector in providing agricultural services and agricultural marketing activities. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cicely Spooner, room N8-039, extension 30464 (42 pages).

1278. Regulation and Commitment in the Development of Telecommunications in Chile

Ahmed Galal
(March 1994)

The private sector won't invest in asset-specific activities in telecommunications unless there is a well-designed, clearly delineated set of regulations as well as mechanisms for conflict resolution. At the same time, for regulatory reform to succeed and be credible, it must have the support of the private sector and be consistent with the country's political and judicial systems.

Over six decades, Chile experimented with three regulatory regimes and ownership patterns for its telecommunications sectors, each with radically different investment patterns.

Until 1970, Chile relied on private ownership and rate-of-return regulation, but excess demand persisted.

In the 1970s, Chile relied on public ownership of two regulated monopolies, but the sector grew even more slowly than before.

After 1982, Chile deregulated some market segments, introduced benchmark regulation, and returned to private ownership. The new regulatory regime and privatization doubled the number of lines in service in only four years.

Galal explains investment behavior as a function of the solutions to two contracting problems: between government and the firm, and between government and interest groups.

Galal concludes that regulatory rules on pricing, entry, and conflict resolution mechanisms are critical for investing in such asset-specific utilities as telecommunications. More important, the outcome of regulatory reform depends on a match between reform and both the prevailing political and judicial systems and interest-group politics.

According to Galal, Chile satisfactorily resolved the two contracting problems in the 1980s. Chile's new regulations are reasonably efficient and very specific about how tariffs are to be calculated, how entry is to be governed, and how conflicts are to be resolved. The rules are embodied in a law that is relatively difficult to change (because the legislature is multiple-party) and easy to enforce (because the judicial system is independent). The impetus for reform came from the emergence of a new private entrepreneurial class, whose growth depends on modern telecommunications services.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — was presented at a World Bank conference on "Institutional Foundations of Utility Regulation," held in Washington, DC in April 1993. The study was funded by the Bank's Research Support Budget under research project "Regulations: Institutions and Economic Efficiency" (RPO 676-94). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 38526 (34 pages).

1279. Optimal Hedging Strategy Revisited: Acknowledging the Existence of Nonstationary Economic Time Series

Ying Qian and Ronald Duncan
(March 1994)

The optimal portfolio model for hedging commodity price and exchange rate risks is extended to nonstationary economic time series data. The new approach corrects the problem of unstable solutions often found with earlier models using economic time series that are nonstationary.

Recognizing that a country's commodity prices, foreign exchange rates, and export earnings are related, earlier studies developed an optimal portfolio model based on an integrated approach. But the estimates were inefficient because they assumed that the time series data used in the model were stationary. As a result, the model produced unstable solutions that were sensitive to exogenous changes.

Many economic time series — including aggregate consumption, national income, exchange rates, interest rates, commodity prices, and volume of trade — are nonstationary (drift over time). A shock to the nonstationary series has a permanent effect. Problems of nonsense regression or spurious regression can arise when performing regression with nonstationary series.

To correct the problem, Qian and Duncan used Engle and Granger's (1987) vector error correction (VEC) specification in the optimal portfolio estimation process. The VEC approach expands the application of the optimal portfolio model to nonstationary economic time series data.

They apply the new approach to data for Papua New Guinea in an analysis of optimal hedging of commodity price and exchange rate risks using commodity-linked bonds and varying the mix of foreign-currency-dominated borrowings.

They find the time series of commodity prices and foreign exchange rates to be nonstationary. When the VEC approach is applied, the results are comparable to those from the earlier study where the nonstationary was ignored.

The optimal portfolio of commodity-linked bonds and foreign currency borrowings derived from the new model shows more significant risk reduction (measured by ex-ante risk reduction) and less sensitivity to changes in assumption about the real interest rate.

In addition, establishing the cointegration relationships among the commodity prices and foreign exchange rates makes it easier to develop economic intuition in explaining the composition of the optimal portfolio.

The VEC's most significant advantage, however, is the stability achieved in the optimal portfolio solutions to changes in assumptions because of the superior long-run properties of the cointegration and error-correction representation.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to investigate the feasibility and benefits of using risk management instruments by primary commodity producers and exporters in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sarah Lipscomb, room R2-056, extension 33718 (40 pages).

1280. The Economic Impact of Export Controls: An Application to Mongolian Cashmere and Romanian Wood Products

Wendy E. Takacs
(March 1994)

Export controls can transfer significant profits from raw materials producers to the processing industries, causing significant net losses to an economy and a substantial net decrease in export earnings.

Countries sometimes use export controls on raw materials to encourage domestic processing. The motivation is usually to assure raw materials at low prices for domestic industries, although exports are sometimes controlled in an attempt to increase export earnings (by promoting exports of higher value-added processed goods rather than raw materials).

The problem is, export controls hurt raw material producers and cause economic distortions that result in net losses to the country. The impact of raw material export controls on total export earnings is ambiguous: the decline in raw material exports when production is discouraged by lower prices may outweigh the effect of increased exports of processed goods.

Takacs develops a simple partial equilibrium model of export controls on raw materials to investigate the impact of export restrictions and to estimate the potential magnitude of the transfers between groups and the net costs of the export-control regimes.

Her estimates of the magnitude of transfers and costs of export controls on raw cashmere (in Mongolia) and wood products (in Romania) indicate that the transfers and costs may be substantial.

She finds that (under reasonable assumptions about elasticities of supply) export controls can transfer significant profits from the raw materials producers to the processing industries, causing significant net losses to the economy and a substantial net decrease in export earnings.

Quantitative export controls will be even more distortive if processing industries have any monopsony (single-buyer) power. This is quite likely in developing countries with small industrial bases — or in economies in transition, where central planning has left a legacy of very large firms in highly concentrated industries.

With monopsony power in the processing industry, both output and exports of final products can be reduced by quantitative export controls on raw material inputs. The quantitative control bestows effective monopsony power on the processing firm and encourages it to exploit this monopsony power by reducing output. If the raw materials could be freely exported, processors would not be able to effectively exercise monopsony power.

This paper — a product of the Trade Policy Division, Policy Research Department — is a synthesis of background material prepared for the joint UNDP/World Bank Trade Expansion Program which provides technical and policy advice to countries that want to reform their trade regimes. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva Pateña, room R2-040, extension 39515 (27 pages).

1281. Human and Physical Infrastructure: Public Investment and Pricing Policies in Developing Countries

Emmanuel Jimenez
(April 1994)

Just as market failures necessitate government intervention in the infrastructure sectors, so government failures should be considered in deciding the extent and depth of that intervention.

Almost by definition, the basis for development is infrastructure — whether services for human infrastructure (health, education, nutrition) or physical infrastructure (transport, energy, water).

Although the infrastructure sectors are diverse, what they have in common is that public policy has had a great deal to do with how these services are provided and financed in almost all countries. Jimenez reviews the recent literature on two key aspects of that involvement: investment and pricing.

While the quality of the econometric evidence varies, recent literature reinforces the view that human and physical infrastructure are critical for economic growth and the reduction of poverty. And the state is recognized as playing a key role in ensuring the efficient, equitable allocation of resources for infrastructure.

Despite many sound theoretical reasons for such public involvement, however, recent studies have shown that it leaves much to be desired in efficiency and equity. One symptom is underinvestment in key subsectors that have high economic returns and that help the poor the most, such as primary education and rural health clinics, in relation to more expensive interventions, such as tertiary education and urban hospitals. Another common malaise is the poor use of scarce resources, leading to low quality (students learning little) and reliability (irregular power and water flows), poor maintenance (dilapidated roads), and inappropriate input use (too many school administrators or health workers and not enough books or drugs in producing education health outcomes). Just as market failures necessitate government intervention in the infrastructure sectors, so government failures should be considered in deciding the depth and extent of that intervention.

The literature has made some advances in diagnosing these problems in poor countries and proposing solutions. But information gaps remain, particularly in developing robust methodologies for:

- Making intersectoral comparisons across the wide range of infrastructure services.
- Crafting more diverse policies about the public-private balance in infrastructure investment, depending on the nature of "public goods" characteristics for various types of infrastructure services, or even across activities for the same service (for example, power transmission versus distribution).
- Taking issues of political economy into account, such as the vested interests of those with large financial interests in infrastructure.

Jimenez also highlights public pricing as a policy initiative that has recently gotten much attention. After briefly reviewing the basic concepts of pricing, he focuses on the literature about pricing reform. Most commonly, the public sector is the main provider of infrastructure services, usually free or at subsidized prices. But the recent literature has aired a rethinking of the balance between public and private financing of infrastructure.

The debate in this area is often heated. Health and education are traditionally provided free and some recent literature argues for positive prices, at least for higher tiers of service. The principle of public pricing has been more widely accepted in transport, energy, and to a lesser extent water, but often the levels are too low and do not provide the appropriate incentives for efficient and equitable use.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — was prepared as chapter 47 of *Handbook of Development Economics*, volume 3, edited by J. Behrman and T. N. Srinivasan. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Liliana Longo, room N5-051, extension 37786 (96 pages).

1282. Copper and the Negative Price of Storage

Donald Frederick Larson
(April 1994)

Just as the price of a call option contains a premium based on price variability, so the shadow price of inventories contains a dispersion premium associated with the unplanned component of inventories. When inventory levels are low, the value of the premium increases to the point where inventories will be held even in the face of a fully anticipated fall in price.

Commodities are often stored during periods in which storage returns a negative price. Further, during periods of "backwardation," the expected revenue from holding inventories will be negative.

Since the 1930s, the negative price of storage has been attributed to an offsetting "convenience yield." Kaldor, Working, and later Brennan argued that inventories are a necessary adjunct to business and that increasing inventories from some minimal level reduces overall costs. This theory has always been criticized by proponents of cost-of-carry models, who argue that a negative price for storage creates arbitrage opportunities. Proponents of the cost-of-carry model have asserted that storage will occur only with positive returns. They offer a set of price-arbitrage conditions that associate negative returns with stockouts. Still, stockouts are rare in commodity markets, and storage appears to take place during periods of "backwardation" in apparent violation of the price-arbitrage conditions.

For copper, inventories have always been available to the market regardless of the price of storage. This is true whether the market is broadly defined at the U.S. or world level, or more narrowly defined as the New York Commodities Exchange or the London Metal Exchange.

Larson argues that although inventories may provide a Kaldor cost-reducing convenience yield, inventories also have value because of uncertainty. Just as the price of a call option contains a premium based on price variability, so the shadow price of inventories contains a dispersion premium associated with the unplanned component of inventories.

Larson derives a generalized price-arbitrage condition in which either a Kaldor-convenience and/or a dispersion premium may justify inventory holding even during an expected price fall. He uses monthly observations of U.S. producer inventories to estimate the parameters of the price-arbitrage condition. The estimates and simulations he presents are ambiguous with regard to the existence of a Kaldor-convenience but strongly support the notion of a dispersion premium for copper. And although the average value of such a premium is low, the value of the premium increases rapidly during periods when inventories are scarce.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to understand international commodity markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Kim, room R2-042, extension 33715 (78 pages).

1283. Interest Rates in Open Economies: Real Interest Rate Parity, Exchange Rates, and Country Risk in Industrial and Developing Countries

Dipak Das Gupta and Bejoy Das Gupta
(April 1994)

Policymakers must address the central questions: How much do world interest rates influence domestic rates? And what are the respective roles of monetary policy, real interest parity, expectations of change in the exchange rate, and "country risk?"

Das Gupta and Das Gupta test whether the integration of the international capital market is more important than domestic factors in determining interest rates, in a broad sample of industrial and developing countries.

The recent turbulence in industrial financial markets has underscored concerns about what shapes interest rates. Some believe an independent national policy on interest rates to be possible. Others believe there is little room for managing interest rates in open economies — without destabilizing effects on exchange rates — given the massive volumes of capital market transactions that force interest-rate parity across countries.

Much less attention has been paid to the formation of interest rates in developing countries, although the issue is increasingly important as more and more countries undertake financial liberalization. Policymakers must address the central question: To what degree are domestic interest rates influenced by world interest rates?

A separate concern is domestic rates that are higher in some developing countries than world interest rates.

Das Gupta and Das Gupta propose a model of real interest rate parity as the main test for capital market integration — that is, that nominal interest rate differences across countries are explained largely by inflation differentials (rather than by covered or uncovered nominal interest parity).

The evidence suggests strongly that although domestic monetary policies play a significant role, real interest parity is a dominant factor in both industrial and developing countries.

But expectations of changes in the exchange rate also significantly influence interest rates.

A third key factor is the apparent presence of significant "country risk," unexplained by macroeconomic balances, for some developing countries (for example, Chile, Indonesia, Mexico, and the Philippines). Such country risk pushes real domestic interest rates higher than would otherwise be predicted.

They discuss possible reasons for such country risk in Indonesia.

This paper — a product of the Country Operations Division, East Asia and Pacific Region, Country Department III — is part of a larger effort in the region to analyze the impact of international interest rates and capital flows on domestic interest rates and monetary policies in open capital account economies such as Indonesia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Boonsri Kim, room D9-094, extension 82477 (22 pages).

1284. The Soviet Economic Decline: Historical and Republican Data

William Easterly and Stanley Fischer
(April 1994)

What led to the relative Soviet decline was reliance on capital accumulation and a low elasticity of substitution between capital and labor. Planned economies are apparently less successful at replacing labor effort with capital. Tentative evidence indicates that the burden of defense spending also contributed to the Soviet debacle.

Soviet growth for 1960–89 was the worst in the world, after controlling for investment and human capital. And relative performance worsens over time.

Easterly and Fischer explain the declining Soviet growth rate from 1950 to 1987 by the declining marginal product of capital. The rate of total factor productivity growth is roughly constant over that period.

Although the Soviet slowdown has conventionally been attributed to extensive growth (rising capital-to-output ratios), extensive growth is also a feature of market-oriented economies like Japan and Korea. One message from Easterly's and Fischer's results could be that Soviet-style stagnation awaits other countries that have relied on extensive growth. The Soviet experience can be read as a particularly extreme dramatization of the long-run consequences of extensive growth.

What led to the relative Soviet decline was a low elasticity of substitution between capital and labor, which caused diminishing returns to capital to be especially acute. (The natural question to ask is why Soviet capital-labor substitution was more difficult than in Western market economies, and whether this difficulty was related to the Soviets' planned economic system.)

Tentative evidence indicates that the burden of defense spending also contributed to the Soviet debacle.

Differences in growth performance between the Soviet republics are explained by the same factors that figure in the empirical cross-section growth literature: initial income, human capital population growth, and the degree of sectoral distortions. The results Easterly and Fischer got with the Soviet Union in the international cross-section growth regression indicate that the planned economic system itself was disastrous for long-run economic growth in the Soviet Union.

This point may now seem obvious but was not so apparent in the halcyon days of the 1950s, when the Soviet case was often cited as support for the neoclassical model's prediction that distortions do not have steady-state growth effects. Since a heavy degree of planning and government intervention exists in many countries, especially developing countries, the ill-fated Soviet experience continues to be of interest.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to study the determinants of long-run growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (56 pages).

1285. Capital Fundamentalism, Economic Development, and Economic Growth

Robert G. King and Ross Levine
(April 1994)

Should our research and policy advice be guided by a modern version of capital fundamentalism, in which capital and investment are viewed as the primary determinants of economic development and long-run growth? No. Capital accumulation seems to be part of the process of economic development, not its igniting source.

Few economic ideas are as intuitive as the notion that increasing investment is the best way to raise future output. This idea was the basis for the theory of "capital fundamentalism."

Under this view, differences in national stocks of capital were the primary determinants of differences in levels of national product. Capital fundamentalists viewed capital accumulation as central to increasing the rate of economic growth. Evidence to support this view was based mostly on case studies of less developed countries.

Since the rise of capital fundamentalism, problems of economic growth and development twice thrust themselves onto center stage of the economic research agenda. In the first episode, neoclassical growth theory and growth accounting research (in the 1950s and 1960s) indicated that differences in patterns of investment and capital formation were *not* the main factors that led nations to be rich or poor, fast-growing or slow. Technology, rather than capital accumulation, appeared to drive improvements in living standards in the long run. Evidence to support this view was based mostly on data from advanced countries.

In the second episode, recent research on growth and development has lent support to two conclusions that capital fundamentalists would find attractive: that differences in national patterns of physical capital accumulation can explain many differences in levels of national product, and that increases in national investment rates can produce major increases in rates of economic growth.

King and Levine found that although the capital-output ratio varies positively with the level of per capita income, there is little support for the view that capital fundamentalism should guide the agenda for research and policy advice. Extending standard growth accounting procedures to a broad sample of 105 countries, they find:

- Differences in capital-per-person explain few of the differences in output-per-person across countries.
- Growth in capital stocks account for little of output growth across countries.
- The ratio of investment to GDP is strongly and robustly associated with economic growth — but there is more reason to believe that economic growth causes investment and savings than that investment and savings cause economic growth.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to understand the role of savings in economic development. The study was funded by the Bank's Research Support Budget under the research project "Patterns of Growth" (RPO 678-26). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-059, extension 37644 (47 pages).

1286. Economic Transformation and the Fiscal Crisis: A Critical Look at the Central European Experience of the 1990s

Luca Barbone and Domenico jr. Marchetti
(April 1994)

The fiscal crisis in central Europe in the early 1990s is attributable mainly to increased social spending rather than to the collapse in profitability of state-owned enterprises.

Barbone and Marchetti argue that traditional explanations of the fiscal crisis in reforming ex-socialist economies overlook crucial connections between key components of the deficit — particularly between reductions in spending and declines in revenues.

Almost all studies of the fiscal aspects of the transition stress the impact on the fiscal budget of the performance crisis in state-owned enterprises. Barbone and Marchetti contend that this aspect of the fiscal crisis has been overstated.

The enterprise sector's net contribution to the government budget — that is, net income from profit taxes after subtracting subsidies — has *increased* during the transition in Czechoslovakia and Poland and has not changed substantially in Hungary.

After reexamining the data, Barbone and Marchetti argue that although the fiscal crisis is certainly structural, the main blame should be attributed to the explosion in spending (especially social spending) rather than to the crisis in revenues.

Many of the social costs of adjustment were previously hidden within the state-owned enterprises system. These social costs include unemployment benefits and the cost of supporting — through pensions or social assistance — the people displaced from the work force by the transformation.

It is important to continue reforming the tax system and tax administration — to deal with the widespread hiding of profits and cheating on taxes — but all three countries already have relatively high levels of taxation. Society in the three countries may not be willing to provide the resources required to support or extend current spending levels.

This paper — a product of the Country Operations Division, Europe and Central Asia, Country Department II — is part of a larger effort in the region to draw cross-country lessons on the issues raised by the economic transformation of former socialist economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sahra Harbi, room H11-121, extension 37143 (34 pages).

1287. Unstable Inflation and Seignorage Revenues in Latin America: How Many Times Can the Government Fool People?

Jacques Morisset
(April 1994)

Governments adopt monetary policies known to be unsustainable in the long run because, in the short term, they can fool people and therefore maximize seignorage revenues. But over time, this strategy backfires as private agents learn to anticipate the relationship between unstable inflation and monetary policy and progressively reduce their real monetary balances.

In the past 20 years, high and extremely volatile inflation rates in Latin America have generally been associated with unstable monetary policies and the (temporary) use of inflationary revenues to finance fiscal deficits.

There seems to be a consensus that high inflation is bad for economic development and growth, so it is unclear why governments have adopted unstable monetary policies they have known to be unsustainable in the long run.

Morisset argues that Latin American governments have followed unstable monetary policies principally to maximize their inflationary revenues. Explanations based on irrationality or on institutional and political shocks (a recent trend in the literature) are only partially convincing, he says.

A government maximizes inflationary revenues by adopting temporary unstable monetary policies because people tend to revise their expectations (slower) faster in periods of (dec-) accelerating inflation as the cost of collecting information (rises) falls compared with other welfare losses. When the rate of inflation is relatively high, a restrictive monetary policy is implemented so people can reconstitute monetary balances. When the inflation rate is low, an expansive monetary policy is adopted to confiscate existing real balances.

Governments may appear for some time to succeed in *fooling* people, by adopting temporary reforms and restoring confidence, but their reputation is damaged when they repeatedly do so. Ultimately, private agents react so quickly and with such sophistication that even small fiscal gaps — or other shocks — produce precipitous declines in money demand.

Over time, private agents learn to anticipate the relationship between unstable inflation and monetary policy and progressively reduce their real monetary balance. In the end, the optimal inflation rate tends toward its steady-state value, as Friedman found 20 years ago.

Morisset develops a small dynamic model to stylize these facts and applies it to Argentina.

This paper — a product of the Country Operations Division, Latin America and the Caribbean, Country Department IV — is part of a larger effort in the region to understand inflation and monetary policies in Latin American countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dorothy Jenkins, room Q7-082, extension 37890 (16 pages).

1288. The Public Finance of Infrastructure: Issues and Options

Vinaya Swaroop
(April 1994)

Because it is difficult to raise funds through general taxes, self-financing of publicly provided infrastructure services is a desirable second-best policy — one that almost all developing countries endorse. But the experience of developing countries suggests that, except in telecommunications, full cost recovery is more the exception than the rule. The private provision of infrastructure, an often-suggested alternative, will work only if an appropriate rate of return is assured — and only if user charges cover costs.

Using economic principles, Swaroop provides criteria for financing infrastructure services where consumption-related user charges can be levied effectively.

In light of the suggested criteria, Swaroop examines the experience of developing countries in financing publicly provided infrastructure services in transport (road), water, telecommunications, and power.

In developing countries, most infrastructure is provided by the public sector, although the private sector has become increasingly involved. Because it is difficult to raise funds through general taxes, self-financing of these services remains a desirable second-best policy, one that almost all developing countries endorse.

But experience suggests that, except in telecommunications, full cost recovery is more the exception than the rule. Financing remains inadequate. The political economy of tariff setting is an important element in low and improperly designed user charges, infrequent adjustments for inflation, and poor enforcement.

Such sectors as water, power, and transport drain funds from the treasury, although their impact varies from sector to sector. When it is difficult to get budget transfers to materialize — especially during a fiscal crisis — there is often a reduction in nonwage operations and maintenance expenditures. As a result, services deteriorate.

The private provision of infrastructure services is often suggested as an alternative. The private provision of services can certainly reduce the public sector's financing requirement. For infrastructure services for which technological advances have made competition possible, the market system could ensure efficient private provision of services, which would be a relief to the public sector. But for services that require a single provider to achieve economies of scale and similar benefits, the private provision of services will work only if an appropriate rate of return is assured — and only if user charges cover costs.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to analyze methods of financing and pricing infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (27 pages).

1289. A Fiscal Needs Approach to Equalization Transfers in a Decentralized Federation

Anwar Shah
(April 1994)

A simple framework for objectively reviewing aggregate and sectoral public spending, assessing the fiscal needs of subna-tional governments, and determining fiscal equalization transfers to over- come fiscal inefficiencies and regional fiscal inequities in a decentralized federation.

Shah reviews the conceptual basis for fiscal equalization transfers, analyzes the theoretical implications for optimal design of equalization transfers, and suggests quantitative approaches for assessing the fiscal needs of subnational governments and determining their entitlement to equalization transfers.

Shah illustrates proposed methods using data for local and provincial Canadian governments. The proposed methods could be useful tools, he says, for undertaking systematic objective reviews of aggregate and sectoral public spending in developing countries.

Shah argues that in a decentralized federation, fiscal inefficiencies and inequities arise because of subnational governments' differing levels of ability to provide comparable public services at comparable tax rates.

Fiscal equalization transfers that reduce or eliminate differentials in net fiscal benefits create a rare instance in economics when considerations of equity and efficiency coincide. These transfers must allow for differences in the spending needs and revenue-raising abilities of the various subnational governments.

Shah argues for a two-tiered approach to equalization. The first tier would be a federal responsibility to equalize the burden of federal taxes.

The second tier would be an interprovincial equalization fund to be administered by the Council of Provincial Finance Ministers. It would entail a comprehensive equalization system that takes into account provincial fiscal capacities as well as provincial spending needs. The standard of equalization would be negotiated.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to develop tools for analyzing public expenditures and policies to reform fiscal systems in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (35 pages).

1290. Oil Price Instability, Hedging, and an Oil Stabilization Fund: The Case of Venezuela

Stijn Claessens and Panos Varangis
(April 1994)

Venezuela could use market-based risk management instruments to reduce short-run risk on oil prices and to complement an oil stabilization fund. Using such instruments would decrease the probability that the stabilization fund would run out of funds, and the fund could be significantly smaller.

The Venezuelan government and PDVSA (Venezuela's state oil companies) are both exposed to oil price instability. Given the existing tax structure, PDVSA has a higher exposure than the government, especially when prices drop below $18–20 a barrel.

Claessens and Varangis show that the volatility of prices for crude oil is higher (but not significantly) than the volatility of prices for refined oil products. And both prices are highly correlated. So, there is not much strength to the argument that Venezuela, being now mainly an exporter of refined products, faces less volatility than when it was exporting mainly crude oil.

The basis risk for hedging Venezuelan crude oil was found to be higher than for other crudes of comparable quality in the region. One explanation could be the pricing policies Venezuela follows, which leads Venezuelan crude oil prices to deviate for long periods from international prices. The basis risk in Venezuelan refined products is much lower and at acceptable levels for doing risk management.

The issue of liquidity in the hedging markets is crucial, as Venezuela is a major oil producer. Oil futures and options markets are liquid, but the liquidity is concentrated in contracts for periods of less than a year. For products, the liquidity is concentrated in the nearest 4–5 months. So, for short-term hedges (6–9 months ahead), there is sufficient liquidity for Venezuela to hedge a substantial part of its exports. For longer-term hedges, the over-the-counter market is the more appropriate vehicle. In either case, it will not usually be the case that all production or exports should be hedged.

Claessens and Varangis also examined the issue of an oil stabilization fund. For an oil stabilization fund to be effective, several preconditions must be met. Most notably: oil prices should not follow a random walk; financial markets are incomplete; and there are large adjustment costs. These conditions do likely apply in Venezuela.

Venezuela's best strategy would be to remove as much short-term oil price risk as possible by using short-dated hedging instruments (such as futures, options, or short-dated swaps) and to also do some longer term hedging (using mainly over-the-counter options and long-dated swaps). They also find that an oil stabilization fund should be complemented by using market-based risk management tools. The oil stabilization fund could then be used to manage any remaining interperiod oil price risk to the extent considered necessary.

This paper — a joint product of the International Trade Division, International Economics Department, and the Finance and Private Sector Development Group, Europe and Central Asia/Middle East and North Africa Regions Technical Department — is part of a larger effort in the Bank to study how developing countries can better manage commodity price risk. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Gustafson, room R2-092, extension 33714 (52 pages).

1291. A Survey of Viet Nam's Legal Framework in Transition

Natalie G. Lichtenstein
(April 1994)

A survey of the laws and decrees that Viet Nam has begun to enact in company law, contract law, banking law, laws on foreign investment, and other priority areas.

Viet Nam is trying to preserve its sociopolitical system while moving gradually toward a different economic system, recognizing that law is a valuable instrument for effecting orderly change.

It has begun to enact the laws and decrees needed in such areas as company law, contract law, banking law, and, especially, laws on foreign investment. Further progress toward a market system will require more legislative activity. Lichtenstein highlights four areas of special priority:

- Thoroughly implementing the new *land law*, by issuing detailed regulations to "marketize" the leasehold system, clarify land-use rights in liquidating state enterprises or making them corporations, and establish a firm basis for mortgage financing.
- Deepening state enterprise reform through a new *legal framework for state enterprises*, to be established under a revised company law, to permit state enterprises to operate under the same framework as nonstate enterprises. This should be accompanied by a new state enterprise

law and regulations for the state's management of its shares in enterprises.

- Revising the framework of *company law* and *foreign investment law* to implement and expand pilot corporatizations.
- Finalizing the *civil code and commercial law* to provide rules of the game for everyday business transactions and for resolution of the disputes that will inevitably result from them.

Other areas less far-reaching in impact but important for market development include regulations to implement bankruptcy law, competition law, and securities law.

In addition, Lichtenstein notes the need to guard against separate legal regimes for state enterprises, nonstate enterprises, and foreign-invested enterprises, as this would interfere with efficient competition among enterprises with different ownership structures.

It is also important to coordinate foreign legal assistance and to accommodate Viet Nam's legal traditions and preferences, especially in such areas as dispute resolution.

This paper — a product of the East Asia and Pacific Division, Legal Department — is part of a larger effort in the department to share with interested parties legal research done as part of the department's operational work. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Malini Rangarajan, room MC6-367, extension 81710 (61 pages).

1292. Services as a Major Source of Growth in Russia and Other Former Soviet States

William Easterly, Martha de Melo, and Gur Ofer
(April 1994)

Russia and the other former Soviet states have little experience with private services and a historically negative view of their role in the economy. A good argument can be made for the international community's strong involvement in services.

Private services could contribute greatly to economic growth in Russia and the other former Soviet states. Easterly, de Melo, and Ofer use econometric analysis to identify the gap between expected and actual levels of service activities in these countries and simulate the effect on GDP and employment of closing the gap. The gap is particularly wide for business and consumer services. Transport and publicly provided services are comparable to, or higher than, those in other countries.

Traditionally, the Marxist doctrine of socialist economies has labeled services "nonproductive." And there is continuing evidence that national policies in these countries favor producers of goods over producers of services. In Russia, for example, there was until recently a 25 percent ceiling on trade margins for some products, and the enterprise profits tax is higher for producers of services than for producers of goods. Also, coefficients for real estate lease payments are sometimes higher for service firms.

It will be important for Russia and the other former Soviet states to identify a policy agenda to facilitate the rapid expansion of services. The policy agenda should entail legal, economic, and institutional changes to eliminate the current bias against services, so that service firms can operate on a level playing field. It should also include proactive programs to stimulate a rapid increase in the level of service activity.

Appropriate measures may include:

- Changes in the tax law, the regulatory framework, and other economic incentives.
- Government programs to accelerate private sector development and the privatization of government distribution and service activities.
- Training for enterprise employees to facilitate their transfer from production to service activities.
- Action to support the orderly development of input and output markets.
- Creation of a modern banking system that will use appropriate criteria to provide credit to service enterprises.
- Consideration of service activities as priorities for international technical assistance and direct foreign investment.

This paper — a product of the Transition Economies Division, Policy Research Department — is part of a larger effort in the department to address issues of economic reform and growth in the former socialist countries. The study was funded by the Bank's Research Support Budget under research project "Business and Consumer Services in the Former Soviet Union" (RPO 677-43). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Chris Rollison, room N11-029, extension 84768 (64 pages).

1293. Product Standards, Imperfect Competition, and Completion of the Market in the European Union

Glenn Harrison, Thomas Rutherford, and David Tarr
(April 1994)

Modeling the static and steady-state effects on trade, production, and market structure of completion of the European Union's internal market.

Harrison, Rutherford, and Tarr model the static and steady-state effects on trade, production, and market structure of completion of the European Union's (EU's) internal market.

The impetus for change comes from the removal of border costs and the costs of producing to different national standards. It also comes from consumers' greater ability to substitute among the products of producers in different EU countries, once the European Union adopts its program on standards.

In the analysis of the static scenario, removing border costs and the costs of supply-side standards improves the welfare of EU countries by only about 0.5 percent of GDP. Results vary greatly across the countries of the European Union, however, because the benefits to a country are roughly proportional to its share of intra-EU trade in its GDP. This is the first model to identify these country differences because of the greater country disaggregation.

The additional effect of the program of standards on consumer demand elasticities increases the competition and reduces markups in imperfectly competitive industries. Then there are additional gains from rationalization, as well as consumer efficiency gains in imperfectly competitive sectors, that result in an increase in the estimated gains to about 1.2 percent of GDP (again with wide differences across EU countries).

The steady-state results let the capital stock in each country adjust to its new higher equilibrium value, which acts as an additional endowment of capital, allowing the European Union to produce a higher level of income. The gains to the European Union then rise to about 2.6 percent of GDP.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to assess the impact of changes in the global trading environment on developing countries. The study was funded by the Bank's Research Support Budget under the research project "The Impact of EC 1992 and Trade Integration in Selected Mediterranean Countries" (RPO 675-64). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nellie Artis, room R2-015, extension 38010 (42 pages, plus 46 pages of appendices).

1294. Regulations, Institutions, and Economic Performance: The Political Economy of the Philippines' Telecommunications Sector

Hadi Salehi Esfahani
(April 1994)

The private delivery of infrastructure can fail in the absence of adequate background institutions, which may need to be fostered before a credible regulatory system can be put in place.

Esfahani addresses the puzzle of sluggish investment in the Philippines' dominant telecommunications firm, PLDT. This case allows a study of the underlying causes of success or failure in a privately owned infrastructure sector in a developing country.

Since its inception, PLDT has been privately owned and has had direct access to international capital markets. But its services have been deficient, in quality and quantity, since the early 1960s.

Using a transaction costs approach, Esfahani hypothesizes that contracting problems between various economic players are important determinants of observed outcomes. Poor services are attributed to factors that impede implementation of performance-improving implicit or explicit contracts, including regulatory rules and regulations.

After reviewing PLDT's responses to events in the last six decades, Esfahani demonstrates that the problem can be traced to lack of commitment to regulatory policies beyond the term of each administration — because a relatively weak legislature and judiciary are dominated by the executive branch. This system of governance is linked to the nature of Philippine society: a small elite engaged in competitive politics among themselves tries to bar the rest of the population from active participation, without actually denying their citizenship. (This social structure is beginning to change.)

The president of the country has great leeway in setting and implementing regulations, so the elite group associated with the president can unilaterally modify telecommunications policy in a way that serves its interests. Those in control of PLDT find investing in the company's highly capital-intensive facilities risky if they are not connected to the president's circle. As a result, the government has an incentive to redistribute quasi-rents through regulatory mechanisms. This imposes a strong "political business cycle" on PLDT's growth pattern: Investment rises only in the early years of "friendly" administrations and remains low at all other times. Esfahani establishes this relationship by empirical analysis.

Despite the failure of cyclical investment, no attempt has been made to reform the regulatory system because most solutions require an institutional commitment to a set of rules and procedures that are either infeasible or contrary to the interests of the elite. Certain reforms are becoming increasingly feasible, however, as a new middle class develops and elite alliances shift.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger regulatory research effort in the department. The study was funded by the Bank's Research Support Budget under the research project "Regulations, Institutions, and Economic Efficiency" (RPO 676-94). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (78 pages).

1295. Why Higher Fiscal Spending Persists When a Boom in Primary Commodities Ends

Bruno Boccara
(April 1994)

After the initial boom in fiscal spending that accompanies a commodity boom, why do commodity-exporting countries tend to maintain higher spending levels despite a drop in commodity prices? Probably because of liquidity constraints and the costs of policy reversal.

Boccara analyzes the fiscal policy of primary commodity exporters.

After the initial boom in fiscal spending that accompanies a commodity boom, he asks, why do commodity-exporting countries tend to maintain higher spending levels despite a drop in commodity prices? He identifies three factors that might explain the tendency: a pressure (from political constituents, for example) to keep spending, the difficulty of reversing policy (or disinvesting — the costs of firing people, for example), and the effects of limited indebtedness, or credit-rationing constraints.

Fiscal policy must be developed with these three factors in mind.

Using a fiscal policy optimizing model, Boccara examines evidence for the existence of these three factors. He uses the model's unconstrained and constrained Euler equations to estimate the Lagrange multipliers associated with the limited indebtedness constraint. The empirical work is done using data from Africa's franc zone countries.

The persistence of pressure to spend may not play an important role, says Boccara. More important in explaining the tendency to maintain spending levels after a commodity boom ends are liquidity constraints and the costs of policy reversal.

This paper is a product of the Country Operations Division, Africa — Sahelian Department. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mather Pfeiffenberger, room J9-261, extension 34963 (39 pages).

1296. Earnings-Related Mandatory Pensions: Concepts for Design

Salvador Valdés-Prieto
(April 1994)

The relative merits and drawbacks of various options for insurance design, privatization, and degree of public funding in the design of mandatory earnings-related pensions.

Valdés-Prieto offers a framework for economic policy on mandatory earnings-related pensions.

He does not discuss the gains and losses from mandating insurance and savings, nor the use of this policy as a vehicle for income redistribution. Instead, he concentrates on areas that are less well understood: the microeconomics, the macroeconomics, and the political economy of mandatory pensions. His analysis focuses on three main areas: insurance design, privatization, and degree of funding. In each area, he provides a checklist of design issues, drawn from international experience and economic analysis.

For insurance, there are two sets of choices: between flat actuarial factor or individual actuarial factor and between defined benefit or defined contribution (in the sense of financial guarantee).

For privatization, the essential choices are between private or nationalized provision, and between private or national demand.

For funding, the choices are between funding or not funding, and between apparent funding or pay-as-you-go financing.

Some combinations can be discarded. Privatization should not be combined with flat actuarial factors, for example, because private suppliers will compete for access to rents that accrue to workers who are awarded implicit subsidies. Privatization is compatible with apparent funding, but not with pay-as-you-go financing, because in the latter there are no funds to invest in the capital market.

The policy choice is ultimately between two coherent designs whose relative advantages and drawbacks Valdés-Prieto discusses:

- An individual actuarial factor with privatized production and demand, with risk explicitly allocated to pensions, and with partial funding.
- Or a flat actuarial factor coupled with nationalized production, pay-as-you-go financing, and statutory promises of fixed real pensions (defined benefit).

This paper — a product of the Macroeconomic and Growth Division, Policy Research Department — is part of a larger effort in the department to understand the underpinnings of old-age security systems. The study was funded by the Bank's Research Support Budget under the research project "Old Age Income Security Report" (RPO 677-45). A previous version of the paper appeared under the title "State Pensions: Concepts for Reform." Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hoda Rizkalla, room N11-041, extension 84766 (58 pages).

1297. How Relative Prices Affect Fuel Use Patterns in Manufacturing: Plant-Level Evidence from Chile

Charles C. Guo and James R. Tybout
(May 1994)

Fuel taxes will induce fuel substitution and reductions in pollution. But evidence from manufacturing firms in Chile suggests that the response will be very uneven — and that the costs of adjustment may be borne more by some sectors and types of producers than others.

Some economists have urged reliance on fuel taxes and other fiscal incentives to reduce air pollution in semi-industrialized countries. They argue that policies that act on relative prices are easier to enforce than those based on emission monitoring, create less misallocation of resources, and are relatively free of the rent-seeking and corruption that accompany regulations administered at the plant level.

To be effective, however, fuel-specific taxes and subsidies must inspire manufacturers to significantly adjust their input use as relative prices change. Moreover, these policies must not create politically unacceptable income redistribution.

Guo and Tybout shed light on both issues by analyzing detailed panel data on Chilean manufacturing plants.

Overall, their estimates suggest that there is substantial scope for fuel taxes to encourage fuel substitution, but that the response will be very uneven — not only across sectors but across producers of different sizes. Although Eskeland and Jimenez (1990) may be correct in arguing that fiscal incentives are easier to implement than are direct emission controls, the costs of adjustment are likely to be concentrated fairly narrowly for some fuels.

The authors found bakeries, for example, to be very responsive to changes in the relative prices of alternative fuels. By contrast, energy demand in metal products plants appears to be very insensitive to relative prices, no matter what estimates are used. Meatpackers fall somewhere between the two — with little price responsiveness in electricity demand, but more in the demand for energy from other sources, especially if coherency-constrained figures are used.

It seems that the effects of fuel taxes would depend in significant measure on the sectoral composition of manufacturing, since input composition varies and some sectors have little flexibility.

This paper is a product of the Public Economics Division, Policy Research Department. The study was funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Economic Policy Instruments in Developing Countries" (RPO 676-48). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (38 pages).

1298. Capital Goods Imports, the Real Exchange Rate, and the Current Account

Luis Serven
(May 1994)

Capital goods account for a major share of international trade, yet trade in capital goods is typically ignored in conventional macroeconomic models of open economies. As a consequence, such models may provide an incomplete — and misleading — assessment of the macroeconomic effects of policy changes and external shocks.

Conventional aggregate models of open economies typically rule out trade in capital goods. But capital goods account for a major share of world trade. In 1990, they represented more than 40 percent of U.S. merchandise exports and more than 30 percent of its imports. In the same year, capital goods imports represented an average of roughly 30 percent of total imports for 82 industrial and developing countries, and almost 9 percent of their GDP.

Serven shows that the presence of imported capital goods greatly changes the short- and long-run effects of macroeconomic policies and external shocks on key macroeconomic variables. Using a rational-expectations aggregate model with intertemporally optimizing agents and with trade in both consumption *and* capital goods, he finds that the long-run equilibrium of the economy displays a negative relationship between the real exchange rate and real output — that is, a real appreciation is associated with an increase in long-run output and the capital stock. With investment subject to adjustment costs, the response to unanticipated permanent disturbances involves a changing real exchange rate and a nonzero current account.

Serven analyzes the macroeconomic consequences of changes in fiscal policy and of transfers of wealth from abroad. He shows that both have well-defined long-run effects on the capital stock and real output. Fiscal expansion, in particular, may have a long-run crowding-in effect on investment.

By contrast, the impact of disturbances on the current account is ambiguous. Serven shows that it depends critically on the degree of intertemporal substitutability in both consumption *and* investment — with the latter measured by the magnitude of investment adjustment costs.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand the effects of macroeconomic policies and external shocks. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (28 pages).

1299. Fiscal Policy in Classical and Keynesian Open Economies

Klaus Schmidt-Hebbel and Luis Serven
(May 1994)

In this model of classical and Keynesian open economies, both permanent and *transitory disturbances cause changes in long-run output and capacity — and transitory and permanent shocks may have opposite effects on the current account. In the Keynesian economy, money-financed fiscal expansion causes real exchange rate depreciation; and non-money-financed fiscal expansion, appreciation.*

Schmidt-Hebbel and Serven analyze the impact of fiscal policy changes in open economies, using a rational-expectations framework that nests two prototype economies: a neoclassical full-employment benchmark economy, with intertemporally optimizing consumers and firms and instant clearing of asset, goods, and factor markets; and a Keynesian economy, with liquidity constraints and wage rigidity, which results in transitory deviations from full employment.

The model is forward-looking in that the economy's short-run equilibrium depends on current and anticipated future values of all exogenous variables, and displays hysteresis (that is, its long-run equilibrium is path-dependent).

Using parameters for a representative open economy, the model is simulated to compare the dynamic effects of increases in public spending financed by taxation, debt, and money. The results illustrate four points:

- Both permanent *and* transitory disturbances cause changes in long-run output and capacity.
- Transitory and permanent shocks may have opposite effects on the current account.
- Liquidity constraints and wage rigidities tend to amplify the cyclical adjustment to fiscal policy changes.
- The Keynesian economy's response to fiscal shocks depends critically on the way the budget is financed: money-financed fiscal expansion causes real *depreciation;* non-money-financed fiscal expansion causes *appreciation.*

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to model macroeconomic adjustment in open economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (47 pages).

1300. Dynamic Response to External Shocks in Classical and Keynesian Economies

Klaus Schmidt-Hebbel and Luis Serven
(May 1994)

Transitory and permanent shocks may have opposite effects on the current account. In particular, an increase in foreign transfers or a terms-of-trade windfall, if permanent, can result in a current account deficit. *But if temporary, they cause a surplus. Liquidity constraints and wage rigidities tend to amplify the cyclical adjustment to external shocks.*

Schmidt-Hebbel and Serven analyze the impact of three classes of external shocks in open economies, using a rational expectations framework that nests three prototype economies: a neoclassical full-employment benchmark, with intertemporally optimizing consumers and firms and instant clearing of asset, goods, and factor markets; a full-employment case with partly liquidity-constrained consumers and investors; and a Keynesian economy, with liquidity constraints and wage rigidity, which results in transitory deviations from full employment.

Using parameters for a representative open economy, they simulate the model to compare the dynamic effects of foreign transfers, a terms-of-trade windfall in the form of a lower price for an imported production input, and a decline in the foreign real interest rate.

They contrast the roles of Keynesian and neoclassical factors in determining the dynamic adjustment to shocks, by analyzing the effects of permanent/transitory and anticipated/unanticipated disturbances in the three prototype economies. The results illustrate three main points:

- Both permanent *and* transitory disturbances cause changes in long-run capacity and output.
- Transitory and permanent shocks may have opposite effects on the current account. In particular, a permanent increase in foreign transfers or a permanent terms-of-trade windfall result in a current account *deficit;* if temporary, they cause a surplus.
- Liquidity constraints and wage rigidities tend to amplify the cyclical adjustment to external shocks.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to model macroeconomic adjustment in open economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (58 pages).

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1301. Estimating the Health Effects of Air Pollutants: A Method with an Application to Jakarta

Bart Ostro
(May 1994)

How does one assess the health benefits of air pollution control? Does-response functions applied to data on Jakarta reveal that air quality improvements will reduce illness, premature death, and learning disabilities in children. Lead and respirable particles are the most important problems.

To develop efficient strategies for pollution control, it is essential to assess both the costs of control and the benefits that may result. These benefits will often include improvements in public health, including reductions in both morbidity and premature mortality.

Until recently, there has been little guidance about how to calculate the benefits of air pollution controls and how to use those estimates to assign priorities to different air pollution control strategies. Ostro describes a method for quantifying the benefits of reduced ambient concentrations of pollutants (such as ozone and particulate matter) typically found in urban areas worldwide. He then applies the method to data on Jakarta, Indonesia, an area characterized by little wind, high population density (8 million people), congested roads, and ambient air pollution.

The magnitude of the benefits of pollution control depend on the level of air pollution, the expected effects on health of the pollutants (dose-response), the size of the population affected, and the economic value of these effects.

The results for Jakarta suggest that significant benefits result from reducing exposure to both outdoor and indoor air pollutants. For example, if annual concentrations of particulate matter were reduced to the midpoint of the World Health Organization guideline (and former U.S. ambient standard), the estimates indicate a reduction per year of 1,400 premature deaths (with a range of 900 to 1,900), 49,000 emergency room visits, 600,000 asthma attacks, 7.6 million restricted-activity days (including work loss), 124,000 cases of bronchitis in children, and 37 million minor respiratory symptoms.

In the case of Jakarta, the methodology suggests that reducing exposure to lead and nitrogen dioxide should also be a high priority.

An important consequence of ambient lead pollution is a reduction in learning abilities for children, measured as I.Q. loss. Apart from that, reducing the proportion of respirable particles can reduce the amount of illness and premature mortality.

Clearly, air pollution represents a significant public health hazard to residents of Jakarta and other cities consistently exposed to high levels of air pollution, such as Bangkok, Mexico City, and Santiago, Chile.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to analyze the economics of pollution control in developing countries. The study was being funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Economic Policy Instruments in Developing Countries" (RPO 676-48). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (63 pages).

1302. Sustainability: Ethical Foundations and Economic Properties

Geir B. Asheim
(May 1994)

Sustainability is about intergenerational distribution. So, public policy aimed at sustainable development should strengthen the mechanisms for redistribution from the present to the future.

Asheim interprets development to be sustainable if it involves a nondecreasing quality of life. He introduces a concept of justice, and shows that a development path must be sustainable to prevent injustice.

He argues, and illustrates through growth models, that altruism alone does not — even in the context of an economically efficient market economy — ensure sustainability. In particular, technologies with complementarity between manmade and natural capital represent cases where sustainability need not result. Thus, policies aimed at economic efficiency, such as internalizing external effects, need not generate sustainable development.

Asheim argues that a positive interest rate is not inconsistent with sustainable development. He also maintains that, even in a perfect market economy, prices may not convey whether investments in manmade capital are sufficient to compensate for the depletion of natural capital. In particular, a non-negative market value of net investment is not sufficient for the present quality of life to be sustainable. Finally, he emphasizes that public policy aimed at sustainable development should strengthen the mechanisms for redistribution from the present to the future.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to analyze environmental problems in a welfare economic perspective. The study was funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Economic Policy Instruments in Developing Countries," (RPO 676-48). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (27 pages).

1303. Conflict and Cooperation in Managing International Water Resources

Scott Barrett
(May 1994)

Can negotiated treaties ensure that nations which share bodies of water share gains from cooperation? Often, but not always — and sometimes only partly.

Water is often not confined within territorial boundaries so conflicts may arise about shared water resources. When such boundaries lie within a federal state, conflicts may be peacefully and efficiently resolved under law, and if the states fail to reach an agreement, the federal government may impose one.

Similar international conflicts are more difficult to resolve because no third party has the authority to enforce an agreement among national states, let alone impose one.

Such international agreements must be self-enforcing. Efficient outcomes may emerge, but are not guaranteed.

International law may emphasize the doctrine of "equitable utilization" of water resources, but there is no clear definition of what this implies.

In the Colorado River case, the polluter (the United States) agreed to pay for all the costs of providing the downstream neighbor (Mexico) with clean water.

In the Rhine River case, the downstream country (the Netherlands) agreed to pay part — but not all — of the costs of cleanup.

In the Colombia River Treaty case, both parties agreed to incur construction costs on their side of the border and share evenly the gross (not the net) benefits. This division may well have yielded a smaller net benefit to the United States than unilateral development would have, but the United States ratified the treaty.

Negotiated outcomes need not maximize net benefits for all countries. To some extent, inefficiencies can be traced to the desire to nationalize resources rather than to gain from cooperative development. The Indus Waters Treaty, for example, divided the Indus and its tributaries between India and Pakistan, rather than exploit joint use and development of the basin.

Both efficiency and equity should be considered in agreements for managing international water resources. The 1959 Nile Waters Agreement between Egypt and Sudan did not reserve water for upstream riparians — notably, Ethiopia. A basinwide approach could make use of Nile waters more efficient and benefit all three riparians: Egypt, Ethiopia, and Sudan. Construction of dams in Ethiopia would give that country irrigation, would eliminate the annual Nile flood, and would increase the total water available to Ethiopia and Sudan. In negotiations over use of the Nile, the net benefits of basinwide management, and the ways these three riparians could share equitably in gains, should be demonstrated.

In the 1980s, Egypt did not run short of water because Sudan did not take its full allocation and because Ethiopia did not withdraw any water from the basin. Increased water demand will inevitably create tension between these states.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to study the use of economic policy instruments in environmental and resource management problems. The study was funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Economic Policy Instruments in Developing Countries (RPO 676-48). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (35 pages).

1304. Informal Gold Mining and Mercury Pollution in Brazil

Dan Biller
(May 1994)

The gold rush in the Amazon region is creating serious environmental problems that imperil future generations. Mercury pollution is a particularly serious problem that should be addressed through an education campaign, through the use of more appropriate (and inexpensive) extraction technologies, and through an effective combination of command and control measures and market-based incentives.

The Amazon region has been responsible for a major share of Brazilian gold production in recent years. The region has witnessed a sizable gold rush comparable only to the California gold rush last century. The gold rush has spawned a powerful informal mining sector and has attracted many people — some who have come to the region in search of wealth and some who were already there but were displaced from other, unsuccessful economic activities. What these people encounter at the mining sites are dreadful living and working conditions. Gold mining also causes substantial environmental problems, which may persist whether gold deposits do or not.

Biller discusses the environmental effects of gold mining in the region, focusing on mercury pollution. Mercury, an important input in gold extraction, is being discharged into the atmosphere and the rivers at alarming rates. The environmental costs of the present extraction technology will be faced primarily by future generations, because of natural chemical processes. Although removing the mercury already discharged from the Amazonian environment may be an enormous task, at least future discharges should be curtailed through the use of appropriate technology, environmental education, and a combination of command and control measures and market-based incentives.

Biller describes the gold extraction process and the extent of mercury use and contamination. He analyzes key elements of the environmental problem, especially the informal miner and the fish economy. Finally, he suggests a combination of command and control regulations and market-based incentives adapted to the informal gold mining economic environment. He emphasizes the need for an education campaign about the perils of using mercury and the availability of more appropriate, and inexpensive, alternative extraction technologies.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to address environmental issues. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dan Biller, room I8-417, extension 37568 (28 pages).

1305. Information and Price Determination Under Mass Privatization

Nemat Shafik
(June 1994)

Information revealed through the bidding process was the most important factor determining the price at which shares were sold under the mass privatization program in the Czech and Slovak Republics.

The valuation of enterprises has been a major stumbling block to privatization in transitional economies. Data on the performance of state-owned enterprises under central planning is plentiful, but that information is not worth much in a market economy, especially one in which much progress has been made in price and trade liberalization.

Voucher privatization schemes have emerged as a politically attractive alternative; the valuation problem is overcome through a decentralized system of bidding, while shares are efficiently allocated through an auction. But nobody has analyzed how these information markets function or how prices emerge from bidding rounds.

Shafik presents econometric evidence on the functioning of information markets and on the process by which prices emerged for enterprise shares under the Czech and Slovak mass privatization scheme. The results indicate that public information about enterprises' past performance clearly mattered, especially in the early rounds when private information had not been revealed. But such historical information alone never explained more than 29 percent of the variation in the ultimate equilibrium price.

Instead, information about enterprises' prospects revealed through the bidding process explained about 85 percent of the variation in prices by the final rounds. Private or "insider" information about enterprises' prospects played a gradually diminishing role as participants learned quickly from each other's bidding behavior.

Other mass privatization schemes rely more heavily on the secondary market to generate an appropriate valuation of shares, rather than on the initial valuations emerging from the primary market. But if improved information is the first step toward efficient asset markets and corporate governance, participants in the Czech and Slovak mass privatization scheme have a head start on other transitional economies.

This paper — a product of the Country Operations Division, Europe and Central Asia, Country Department II — is part of a larger effort in the department to analyze innovative approaches to privatization in transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Azeb Yideru, room H7-051, extension 36067 (23 pages).

1306. Capital Flows and Long-Term Equilibrium Real Exchange Rates in Chile

Ibrahim A. Elbadawi and Raimundo Soto
(June 1994)

Cointegration techniques are used to disentangle the effect of capital flows on the equilibrium real exchange rate. Short-term flows and portfolio investment were found to have no influence, but sustainable long-term inflows and foreign direct investment have an appreciating effect. So, an important part of the actual appreciation of the Chilean peso would not require counterbalancing exchange rate or macroeconomic policies.

In the context of an empirical model, Elbadawi and Soto examine the impact of capital flows, among other fundamentals, on long-term exchange rates in Chile.

The real exchange rate and its fundamentals were found to be cointegrated during 1960–92. This cointegration allows a reinterpretation of uni-equational estimates of the equilibrium real exchange rate (ERER) to be consistent with long-run forward-looking behavioral models. It also permits the estimation of an error-correction model capable of disentangling short-run from long-run shocks in observed movements of the ERER. And the nonstationary nature of the fundamentals allows one to decompose innovations into permanent and transitory components — to get an empirical measure of the sustainability of the fundamentals with which the ERER is determined.

In general, the estimate of the cointegration of the ERER and its corresponding dynamic error-correction specification corroborates the theoretical model and produces fairly consistent results.

The derived ERER index and the corresponding real exchange rate misalignment (for given sustainable values of the fundamentals) successfully reproduce the salient episodes in Chile's recent macroeconomic history.

Capital flows are disaggregated into four components:

- Short-term capital flows.
- Long-term capital flows.
- Portfolio investment.
- Foreign direct investment.

As expected from economic theory, short-term capital flows and portfolio investment were found to have no effect on the ERER (although they can affect the real exchange rate in the short run).

But long-term capital inflows and foreign direct investment have a significant appreciating effect on the ERER.

To the extent that the recent inflow of capital to Chile is dominated by long-term capital flows that are judged to be sustainable, an important part of the ensuing appreciation of the real exchange rate is consistent with equilibrium behavior — reducing the need for counterbalancing exchange rate or macroeconomic policies.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand the links of foreign shocks and macroeconomic policies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059 extension 39065 (34 pages).

1307. How Taxation Affects Foreign Direct Investment (Country-specific Evidence)

Joosung Jun
(June 1994)

Tax rules in the home country significantly affect capital flows from foreign direct investment; tax rules in the host country may not affect investment incentives as much as they are conventionally perceived to do. But in evaluating how taxes affect foreign direct investment, more attention should be paid to the specific taxes in both home and host countries.

Jun estimates empirically the degree to which the tax systems of both home and host countries affect foreign direct investment. He presents evidence that tax rules significantly affect capital flows from foreign direct investment (FDI).

Home country taxes in particular appear to significantly affect the behavior of FDI. By identifying the incentives associated with different tax parameters in the home and host countries, Jun identifies different channels through which taxes affect FDI.

The home-country *statutory* tax rate is claimed to measure the incentive effect of potential home-country surtaxes on new FDI; the home-country *effective* tax rate is shown to measure how taxes affect the substitution of investment in one country for investment in another.

The host country's effective tax rate should represent either the incentives for FDI in that country or simply the amount of foreign tax payments that are creditable against the home tax liability on the FDI.

The most robust of the statistical results — using data on investment in the United States by ten other countries between 1980 and 1989 — shows that the home-country statutory tax rate significantly hurts FDI when the country makes foreign-source income subject to home-country taxation. (The same variable has no significant effect on FDI from those countries that exempt foreign-source income from home-country taxation.)

Jun found that the coefficients of the home country's statutory and effective tax rates take the opposite sign in the estimated equations; this supports the presence of different channels through which home country tax systems influence FDI.

The weak performance of the host-country tax variable in the estimated equations suggests that the host-country tax does not affect decisions about where to invest FDI as much as is conventionally perceived. The host country tax largely represents creditable foreign taxes for many investors.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to study determinants and attributes of foreign direct investment. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheilah King-Watson, room S8-040, extension 31047 (40 pages).

1308. Ownership and Corporate Control in Poland: Why State Firms Defied the Odds

Brian Pinto and Sweder van Wijnbergen
(June 1994)

Survey results in Poland indicate that hard budgets and import competition can spur state firms to adjust even when privatization lags behind. But why did state enterprise managers instigate such adjustment?

Survey results in Poland indicate that hard budgets and import competition can spur state firms to adjust even when privatization lags behind. As they examine the underpinnings of Polish reform, Pinto and van Wijnbergen address the key question of why managers instigated such adjustment.

They examine how corporate ownership and control influence the behavior of state firms, as illuminated by the following survey findings and conclusions:

- Contrary to expectations, state firms took painful adjustment measures. Enterprise managers firmly believed that privatization was coming. This belief led them to manage better, not worse; a private-sector-based economy means a market for managers and a premium on skilled management.
- The excess wage tax (the much-criticized "Popiwek" scheme) did restrain wage-setting behavior, judging from the wage-setting equations presented by Pinto and van Wijnbergen.
- Essential to the good performance of state industries is an end to open-ended subsidies. Subsidies, rather than helping firms adjust, give them incentives to continue their past behavior and destroy any mechanism of control other claim-holders might have.
- Commercial banks, the Polish experience shows, can be made to exercise governance over state firms. Without effective takeover mechanisms, withholding funds is their most powerful instrument. That instrument is made powerless if firms, pressured to adjust by banks, can turn to the government themselves. Banks themselves started to respond appropriately — and to play a powerful role in disciplining enterprises — only after their own governance and control/incentive mechanisms had been reformed as part of the banking reforms of the fourth quarter of 1991.

This paper — a product of the Economics Department, International Finance Corporation — is a follow-up to an effort initiated while the first author was in the World Bank's Resident Mission in Poland. The study was funded by the Bank's Research Support Budget under the research project, "Enterprise Transformation in Poland" (RPO 678-25). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Marylou Kam-Cheong, room K6-115, extension 39618 (36 pages).

1309. Is Demand for Polluting Goods Manageable? An Econometric Study of Car Ownership and Use in Mexico

Gunnar S. Eskeland and Tarhan N. Feyzioglu
(June 1994)

This model displays immediate adjustment and a price elasticity for gasoline of –0.8. Demand for gasoline, and the subsequent generation of pollution, are sensitive to pricing policies.

Charging for social marginal costs is efficient regardless of price elasticities, but the importance of getting prices "right" is greater the more manageable, or elastic, the demand. In efficient pollution control programs, options to make cars cleaner are combined optimally with demand conservation. The roles played by "cleaner cars" as compared with "fewer trips" are determined by empirical parameters: cheap, clean technologies would imply a great role for cleaner cars, while high demand elasticities lead to a greater role for demand reduction.

In seminal research, Pindyck found evidence to support his hypothesis that demand for commodities such as gasoline should have lower price elasticities and higher income elasticities in developing than in industrial countries. Eskeland and Feyzioglu estimate a model of gasoline demand and car ownership in Mexico, using a panel of annual observations by state. Key features they introduce are instrumental variables on differenced data and the treatment of (1) possible dynamics, (2) measurement errors in the data, and (3) unobserved characteristics in individual states. They use tests of serial correlation in the residuals to model the dynamics properly. The resulting model is one of almost immediate adjustment, with a short-term price elasticity for gasoline close to the long-term estimate of –0.8.

The model displays elasticities that are lower (for income) and higher (for price) than those Pindyck hypothesized, and are within the range of elasticities found in industrial countries.

Byproducts of the model: The elasticity of car purchases with respect to gasoline prices is positive. Scrappage decisions are affected by income and by car and gasoline prices. And these elasticities are not significantly different in the richer states.

For policy purposes, these findings do not support "elasticity pessimism." The use of car services is sensitive to pricing, which suggests that consumers, for some of their demand, have reasonably good alternatives to car services. Consideration of external costs — such as accidents, congestion, air pollution, and road damage — thus involve considerable demand conservation.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to study environmental policy problems in developing countries, emphasizing fiscal policy instruments. The study was funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Policy Instruments in Developing Countries" (RPO 676-48). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (31 pages).

1310. China's Economic Reforms: Pointers for Other Economies in Transition?

Justin Yifu Lin, Fang Cai, and Zhou Li
(June 1994)

China's approach to economic reform was gradual and incremental. China's experience may provide useful pointers for other capital-scarce economies in transition from strategies geared to heavy industry to a more balanced profile of development.

China's two main economic problems before reform were low incentives to workers and the misallocation of resources among sectors. These problems were the result of a development strategy oriented toward heavy industry.

By improving material incentives, China's reforms created a flow of new resources and allowed them to be allocated to sectors suppressed under pre-reform strategies.

The onset of reform in China was not allowed to disrupt production from existing resources. Instead, the newly created resources were permitted to accrue and to flow into the more productive, often light industrial sectors, thus stimulating continuous growth of the national economy during reform.

Low incentives and the suppression of nonpriority sectors are common features of the legacy of economies in transition from central planning that based their development on the rapid growth of heavy industry. China's approach may be of interest to them. Among lessons China learned are that:

- Autonomy must be granted to micromanagement units and preserved to improve the incentive structure and create a new flow of resources.
- While maintaining essential minimum levels of production in the pre-reform priority sectors, autonomous enterprises must be permitted and encouraged to allocate new incremental resource flows to the previously suppressed sectors.
- In parallel, the distorted policy environment and planned-allocation system must be progressively reformed to bring them into line with the new system of incentives and modus operandi of autonomous enterprises.

This paper — a product of the Agricultural Policies Division, Agriculture and Natural Resources Department — was presented to a Bankwide seminar in March 1994. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cicely Spooner, room N8-039, extension 30464 (41 pages).

1311. The Supply Response to Exchange Rate Reform in Sub-Saharan Africa (Empirical Evidence)

Mustapha Rouis, Weshah Razzak, and Carlos Mollinedo
(June 1994)

Expansionary monetary policy leads to appreciation of the real exchange rate for 22 Sub-Saharan African countries. Devaluations can be an effective policy tool to correct an overvalued currency, if accompanied by restrictive monetary and fiscal policies.

In the diversity of exchange-rate regimes in Sub-Saharan Africa in the 1980s, there was a trend toward more flexible regimes and smaller parallel markets. How particular exchange rate arrangements affect such factors as output supply cannot be determined for Sub-Saharan African countries on the basis of experience in other developing countries, because Sub-Saharan countries differ in the composition of their exports and imports, in level of industrialization, and in development of the financial sector.

Rouis, Razzak, and Mollinedo supplement a survey of the literature with empirical testing, using pooled time-series and cross-section data for 22 countries in Sub-Saharan Africa for 1971–91. Among their findings:

- When macroeconomic policies are inconsistent and there is a failure to adjust to adverse shocks, fixed regimes lead to overvaluation and the development of widespread parallel markets for foreign exchange.
- Sub-Saharan African countries have attempted exchange-rate unification through occasional devaluations, a crawling peg, official dual markets, foreign exchange auctions, and a market pricing rule. Most such experiences have been gradual, and their outcomes mixed. Success in exchange-rate unification (as experience in Ghana and Uganda shows) depends on three crucial elements: supportive monetary and fiscal policy, external budgetary and balance-of-payments support, and official commitment to a credible reform process.
- In the face of significant adverse real shocks (internal and external), built-in monetary and fiscal rules in fixed exchange rate regimes with currency convertibility (as in the CFA zone) may be inadequate to bring about the required short-term adjustment.
- As elsewhere in the developing world, the effect of real devaluation on output in Sub-Saharan Africa is mixed in the short-run (contractionary when demand elasticities are low) and neutral in the long-run. Real depreciations have neutral effects on per capita growth of real output in the transition to steady state.
- Farm producers in Sub-Saharan Africa respond to price incentives for a single agricultural crop as farmers do elsewhere in the developing world: they behave rationally. And econometric evidence confirms that growth in agricultural exports is not achieved at the expense of food production.
- Applying the Granger-causality test to this data set reveals strong causality, running in both directions, between money growth rates and inflation. It also shows causality running from output to inflation, and from inflation to nominal devaluations.

This paper — a product of the Africa Regional Office, Office of the Chief Economist — is part of a larger effort in the department region to better understand the supply response to exchange rate reform in Sub-Saharan Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jocelyn Schwartz, room J5-255, extension 32250 (85 pages).

1312. The New Wave of Private Capital Inflows: Push or Pull?

Eduardo Fernandez-Arias
(June 1994)

In most cases, push. Lower international interest rates are a key factor in the new wave of capital inflows to developing countries. Whether that wave is sustainable depends on the economic performance of industrial countries. This makes developing countries vulnerable — but a soft landing is feasible.

Widespread private capital inflows to middle-income countries have surged over the past three years. At the same time, Brady-type debt reduction operations and domestic policy reform took place, indicators of country creditworthiness improved dramatically, and international interest rates plummeted. Which factors most fully explain the wave of capital inflows? How sustainable is it?

Some see this new wave of voluntary capital inflows as being mostly "pulled" by attractive domestic conditions, which open new and profitable investment opportunities in the domestic economy and improve country creditworthiness. Under this interpretation, if successful domestic policies are maintained, capital inflows will be sustained.

Others see these inflows as being mostly "pushed" by conditions (especially low interest rates) in industrial countries. Under this interpretation, capital inflows would diminish and possibly turn to outflows if international real interest rates returned to the higher levels of the 1980s.

Fernandez-Arias presents an analytical model of international portfolio investment in developing countries based on non-arbitrage conditions between external returns and domestic returns adjusted by country risk. He uses the model to explain why the new wave of private capital inflows is mostly a middle-income country phenomenon. To analyze the issue of private capital inflows, he applies the model to data for a representative panel of middle-income countries.

The main empirical result is that (except in Argentina, the Republic of Korea, and notably, Mexico), the surge of capital inflows appears to be driven more by low returns in industrial countries than by domestic factors. So recent levels of capital inflows would be unsustainable if global interest rates returned soon to higher levels and cautious policies should be followed.

Two other important conclusions are obtained. First, depressed returns in industrial countries caused the improved creditworthiness in indebted countries through their effect on discount rates. Country creditworthiness was an important transmission mechanism for external shocks and is the key to reconciling the push and pull interpretations of market data.

Second, a soft landing appears feasible. Stock adjustment does not appear to be a significant component of the adjustment mechanism manifested in the surge of capital inflows. In other words, the evidence so far suggests that a gradual increase in international interest rates would result in less capital inflow, or moderate capital outflows in some countries, rather than massive capital outflows that quickly bring down the stock of foreign liabilities. By and large if there are capital outflows, they are unlikely to match past inflows unless the reversal in external conditions coincides with a worsening of domestic conditions.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to analyze foreign investment in emerging markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Ronald Tutt, room S8-040, extension 31047 (40 pages).

1313. New Estimates of Total Factor Productivity Growth for Developing and Industrial Countries

Vikram Nehru and Ashok Dhareshwar
(June 1994)

An error correction model, using new data on human and physical capital stock, is used to estimate the growth of total factor productivity for 83 countries for 1960–87. The results show that human capital accumulation explains more cross-country variations in growth than previously thought. And cross-country differences in total factor productivity growth can be attributed mostly to differences in initial conditions and political stability.

Nehru and Dhareshwar present new estimates of long-term total factor productivity (TFP) growth for 83 industrial and developing countries for 1960–87. These estimates are based on new data developed for the research project on total factor productivity growth (and available on diskette). Although based on the "old" growth theory, the estimates are derived from a cross-country production function using an error-correction model. This is more appropriate than the usual first-difference model for capturing long-term relations.

Nehru and Dhareshwar conclude the following:

- The estimated cross-country production function shows that human capital accumulation is far more important in explaining growth than several earlier studies have indicated. This conforms with recent studies that find raw labor's share in income to be much less than thought previously.
- Contrary to the results of other studies, TFP growth in high-income countries has been comparable to that in faster-growing low- and middle-income countries.
- The fastest growing developing economies have based their growth more on the rapidity with which they have accumulated physical and human capital than on high TFP growth.
- Cross-country differences in TFP growth are largely due to differences in the level of political stability and initial conditions (notably, initial per capita income and the initial level of human capital).
- Cross-country differences in TFP growth (once corrected for initial conditions and political stability) cannot be explained by structural and policy differences for which data are readily available (despite an exhaustive search for other explanations).
- Sub-Saharan Africa is the only region for which the actual TFP growth is significantly lower than the TFP growth predicted on the strength of initial conditions and political stability (by about 1.1 percentage points a year).

The cross-country profile of TFP growth and the role of initial conditions point toward the dual role played by human capital in the development process: as a standard factor of production to be accumulated and as a source of learning and entrepreneurship and hence of interesting growth dynamics. It may be necessary to rethink the concept of "TFP as the residual" in models with human capital.

And the relationship between policy variables and TFP growth is likely to be sensitive to the way human capital is incorporated in the production function. These substantive issues, along with a number of econometric refinements, are fruitful avenues for further research.

This paper — a product of the International Economics Department — is part of a departmental research project on total factor productivity growth and part of a broader Bank effort to understand how sources of economic growth in developing countries may be influenced by national policies and by global economic trends and events. The study was funded by the

Bank's Research Support Budget under the research project, "The International Economic Environment and Productivity Growth in Industrial and Developing Countries" (RPO 676-67). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Moira Coleridge-Taylor, room S8-049, extension 33704 (36 pages).

1314. The Significance of the "Europe Agreements" for Central European Industrial Exports

Bartlomiej Kaminski
(June 1994)

The importance of the European Association Agreements signed in 1991 and 1992 has been underscored by the rapidly shifting trade patterns between the formerly socialist countries of Central and Southern Europe and OECD markets, and by the emergence of the European Union as their major trading partner.

In 1991 and 1992, the European Union (EU) and the economies in transition of Central and Southern Europe — the CEE-5 (Bulgaria, the former Czechoslovakia, Hungary, Poland, and Romania) — signed the European Association Agreements. The Agreements establish a new framework for their mutual economic relationship, including the transition to a free trade regime for industrial products.

The importance of the "Europe Agreements" has been underscored by the rapidly shifting trade patterns between the CEE-5 countries and OECD markets, and by the emergence of the EU as their major trading partner.

Kaminski examines the significance of the trade concessions granted by the EU to the CEE-5 countries (1) by analyzing the incidence of EU trade barriers on imports from the CEE-5 before and after implementation of the Agreements and (2) by identifying trade flows of groups of industrial products subject to different concessions. He focuses on trade liberalizing measures for industrial products for which a free trade regime should be in place no later than five years after the Agreements are in force. (Excluded are textiles and clothing, discussed in the Uruguay Round of Trade Negotiations.)

Overall, the industrial product trade provisions of the Agreements, which affect about 80 percent of CEE-5 exports to the EU, significantly improve those countries' access to EU markets. In 1992, the first year they were in force in Hungary, Poland, and the former Czechoslovakia, the Agreements freed slightly less than 50 percent of total exports to the EU from import duties and nontariff barriers (NTBs). In terms of the 1992 composition of exports, this "free trade" share in total exports increases over five years to about 80 percent for the former Czechoslovakia, 60 percent for Hungary, and 70 percent for Poland.

Although there are significant differences in the composition of exports from CEE-5 economies affected by EU trade liberalizing measures, these are the result of varying shares of sensitive (especially agricultural) products across countries, not dissimilar of concessions from the EU.

The EU's negotiation approach, as revealed in the Agreements, was to minimize the adverse effects of opening up "sensitive" sectors: the time and the pace of transition tends to be longer and slower for groups of products with higher NTB-coverage ratios and higher average tariffs. Whether by design or not, the variation in products identified in various provisions assures a more equitable treatment of CEE-5 countries, judging from their industrial export patterns in 1990–92.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze the new trading relations developing between Central and Eastern Europe and the European Union. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva R. Pateña, room R2-040, extension 37947 (37 pages).

1315. Global Tradable Carbon Permits, Participation Incentives, and Transfers

Bjorn Larsen and Anwar Shah
(June 1994)

A global tradable-permit regime designed to minimize the costs of stabilizing world carbon emissions from fossil fuel combustion at 1987 levels by the year 2000 — and to be acceptable to both OECD and non-OECD countries.

Most OECD countries have committed themselves to stabilizing their carbon emissions at 1990 levels by the year 2000, and some to reducing emissions to 80–90 percent of 1990 levels by the years 2005 or 2010.

Most non-OECD countries are reluctant to reduce emissions to combat global climate change. They argue that such policies would forestall their development, that the stock of greenhouse gases in the air is primarily from historical emissions from OECD countries and the former Soviet Union, and that those countries should be made to bear the cost of such abatement policies.

Larsen and Shah evaluate alternative permit allocations for a global tradeable permit regime designed to minimize the costs of stabilizing world carbon emissions from fossil fuel combustion at 1987 levels by the year 2000.

They find that an important cross-section of countries would have little incentive to participate in a treaty based on such widely discussed forms of permit allocations as permit allocations by GDP, by population, or by some combination of the two.

To encourage participation, it is proposed that each non-OECD country be allocated permits equivalent to its projected baseline emissions — and that OECD countries be allocated permits equivalent to the world emissions target minus the permit allocations to the non-OECD countries. Such a scheme recognizes that OECD countries have a higher willingness to pay for increasing reductions and that non-OECD countries have a smaller historical "global emissions debt."

Under that proposed regime, Larsen and Shah find that the cost of emissions reductions for OECD countries would be about 50 percent lower than unilateral reductions would be, and that non-OECD countries would also realize substantial net gains from participating in such a global treaty.

Moreover, that global treaty would be 68 percent less costly worldwide than would realizing the same target through unilateral reductions by the OECD countries.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to examine economic policy instruments for global environmental protection. The study was funded by the Bank's Research Support Budget under the research project "World Energy Subsidies" (RPO 677-28). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (21 pages).

1316. Preserving the CFA Zone: Macroeconomic Coordination After the Devaluation

Shantayanan Devarajan and Michael Walton (June 1994)

An examination of the federalist aspects of macroeconomic management after devaluation in the CFA Franc Zone: how to maintain macroeconomic discipline in a monetary union, how to prevent mismanagement in one state from spilling over to another, and how to use the zone's institutions to make devaluation succeed.

On January 12, 1994, the CFA franc — the currency of the thirteen African states of the CFA Franc Zone — was devalued 50 percent. The event had been expected for some time, but the magnitude and one-shot nature of the devaluation posed problems for members of the zone's two monetary unions.

Devarajan and Walton conclude the following, among other things, about what has happened:

- Inflation has been substantially lower than in most developing countries, but the mechanisms of macroeconomic discipline have been inadequate, especially for fiscal discipline. The recent crisis has its roots in failures of fiscal discipline as much as in the constraints on restoring competitiveness because of the fixed parity.
- The transmission of inflation across states has not been a problem in the past, but could be more of one in the future with the common nominal shock, the temporary loss of the French franc as an anchor, and the rising importance of supranational quasi-fiscal deficits.
- For macroeconomic coordination, it is appropriate to continue relying on a mixture of rules and discretion and not on the market, at least in the medium term. The 20-percent rule has been inadequate in the past and should be supplemented by annual targets for fiscal performance (including deficit-to-GDP ceilings, a primary surplus requirement, and no borrowing to finance current spending).
- Sanctions on errant states should be imposed through reduced access to borrowing. Central-bank and at least some foreign borrowing should be conditional on meeting the annually agreed-upon targets.
- The central banks' ability to impose these sanctions should be strengthened, possibly by channeling a portion of foreign credit going to the zone through the central banks. Technical assistance may also help.
- Insulation can be effected by ensuring that quasi fiscal deficits are explicitly financed by country budgets, reversing the recent trend to internationalize them by having the BCEAO finance part of the national banks' portfolio problems.
- The current size of the quasi-fiscal deficit (and hence the future earnings position) of the two central banks should be assessed early and put on the budgets of the various national governments, with allocation based on the original source of the problem. If necessary, additional measures should be undertaken to secure a strong capital base for the central banks.
- Exit from the zone is best discouraged by securing the zone's credibility. It should also be clear that those that exit because of macroeconomic problems will not have easier access to international sources of finance.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to study structural adjustment in Sub-Saharan Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (19 pages).

1317. Estimating the Efficiency Gains of Debt Restructuring

Jeremy Bulow, Kenneth Rogoff, and Ning S. Zhu (July 1994)

The debt-overhang disincentive may not be as important as the broader problem of debtors' credit constraints in international capital markets. For severely indebted low-income countries, the best strategy is probably to replace nonconcessional debt with new concessional loans.

One rationale for debt reduction operations under the Brady Plan has been, by alleviating the debt overhang, to improve investment efficiency. Brady-type debt and debt-service reduction (within a strong policy framework, where there is a track record of economic adjustment) has been shown to affect development significantly.

The principle benefit of eliminating the debt overhang is to improve investment incentives for private investors — direct liquidity relief is secondary. So, evaluating a debt and debt-service reduction operation should involve estimating efficiency gains as well as direct financial savings.

Bulow, Rogoff, and Zhu present a method (requiring only weak assumptions) for establishing an upper bound on the efficiency impact of debt reductions. The key reference framework for evaluating much more complex Brady-type debt deals is open-market debt buybacks.

Their approach to determining this upper bound hinges on the assumption that efficiency gains on a straight open-market repurchase of debt never exceed the gains to creditors. If an open-market buyback indeed reduces the debt overhang and moves a country toward more (and more efficient) investment, creditors will anticipate this in setting a price for remitting their claims. So, at least part of the efficiency gains are dissipated in additional capital gains to creditors.

To give point estimates to efficiency gains, they develop a simple two-period model of debt overhang and investment and discuss assumptions under which it is possible to obtain a closed-form solution to the model. Their empirical estimates indicate that the general bounds derived in the first step tend to overstate substantially the efficiency gains of debt reduction operations. In Mexico's case, for example, the upper-bound estimate of efficiency gains is US$15 billion, but the point estimate is only about US$1 billion.

What are the policy implications of their low point estimates? The debt-overhang disincentive may not be as important as the broader problem of debtors' credit constraints in international capital markets.

How can new loan packages to developing countries be structured to maximize investment incentives? By using loans rather than outright grants, donors can give a country more funds for current investment at lower present discounted expense. But grants, unlike loans, do not distort investment incentives.

In short, if a credit-constrained country starts with no debt overhang, the first tranche of aid should probably be in hard loans. As total transfers increase, if the borrowing country has not gained access to private capital markets, marginal transfers should be grants. The optimal strategy for new flows can involve both increasing grants and decreasing loans. When transfers are expected to be heavy, a case can be made for using grants exclusively.

This paper — a product of the International Finance Unit, International Economics Department — is part of a larger effort in the department to understand the costs and benefits to countries of debt and debt service reduction arrangements. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 33722 (30 pages).

1318. Exchange-Rate-Based Stabilization in Argentina and Chile: A Fresh Look

Miguel A. Kiguel and Nissan Liviatan
(July 1994)

Exchange-rate-based stabilization programs supported by a sustained fiscal adjustment generally reduced long-term inflation. Success was not easy, however, because rigid adherence to the exchange rate rule many times resulted in strong overvaluation of the currency and balance-of-payments problems before stabilization was finally secured.

Exchange-rate-based stabilization is designed to reduce inflation by using the exchange rate as the main nominal anchor. This does not necessarily mean a fixed exchange rate. A crawling peg with a low rate of depreciation or a pre announced gradual reduction in the rate of devaluation are alternative ways to use the exchange rate as a nominal anchor.

Exchange-rate-based stabilization (ERBS) has been widely used in the high-inflation economies of Latin America. Argentina, Chile, and Uruguay adopted a pre-announced crawling peg in the late 1970s (the famous *tablitas*) to bring down inflation, with mixed results. Israel and Mexico used the exchange rate as a nominal anchor, and inflation came down significantly. More recently, Argentina relied on a fixed and convertible exchange rate (the convertibility plan) to bring to an end four decades of inflation. So far, the outcomes have been good.

Kiguel and Liviatan find that ERBS have generally been more effective than money-based programs in bringing down inflation in the high inflation economies. But when inflation was reduced gradually, the process resulted in continuous (sometimes significant) real appreciation. Even fixing the exchange rate in Chile in 1979 did not reduce the underlying rate of inflation.

Argentina's recent convertibility plan has been more successful in bringing inflation down significantly than previous money-based programs (from monthly rates of about 10 percent to just 1.5 percent in a few months). One could argue that this is a special case, since Argentina was coming from full-blown hyperinflation, so Kiguel and Liviatan compared the fixed-exchange-rate periods in Argentina and Chile, and came up with useful insights.

Argentina's greater success cannot be explained only by fiscal arguments. When Chile fixed its exchange rate in 1979, it was already enjoying a budget surplus. Argentina in 1991 was running a small deficit — smaller than in previous years, but a deficit.

Perhaps a better explanation is the government's perceived strong commitment to the fixed exchange rate and the potential large costs of reneging on it. The convertibility law made devaluation far more difficult (requiring congressional approval) and reduced the chances of discretionary devaluations. And the government tied its own hands further by legalizing the use of the dollar as unit of account and means of exchange. The costs of abandoning the fixed exchange rate were also perceived to be greater in Argentina. Devaluation was (and is) perceived as opening the door for renewed hyperinflation, a dreadful scenario. Chile did not face this threat so it was more difficult — and took longer — to convince the public that the government was determined to maintain the parity.

Governments tend to stick to the fixed exchange rate longer than is prudent. It is now apparent that some flexibility at an earlier stage would have reduced the costs of the final failure of the *tablitas*. Why do governments find it so difficult to make exchange-rate policy more flexible? Why do they wait for a balance of payments crisis rather than anticipate it? Perhaps because they fear the public will equate flexibility with failure and a loss of credibility.

Kiguel and Liviatan found, however — in the experiences of Israel and Mexico — that inflation does not necessarily go up when the exchange rate is made more flexible. Countries must balance the need to maintain an exchange rate rule (for credibility) with the need to keep external balance.

This paper — a product of the Office of the Vice President, Development Economics — was prepared for the seminar on central banking organized by the International Monetary Fund and the Monetary and Exchange Affairs Department. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Milagros Divino, room S9-049, extension 33739 (26 pages).

1319. The Financial System and Public Enterprise Reform: Concepts and Cases

Asli Demirgüç-Kunt and Ross Levine
(July 1994)

Public enterprise reform is more successful in countries whose financial systems are relatively well developed. Countries seeking to implement broad public enterprise reforms achieve greater success if they also implement substantial and well-designed financial reforms.

Public enterprise reform is an important part of policy strategies to accelerate economic growth in many countries. Demirgüç-Kunt and Levine identify two distinct but complementary approaches to public enterprise reform: the private sector development approach and the corporatization approach.

The private sector development approach involves privatizing public enterprises and encouraging private sector development to improve economic efficiency and shrink the relative size of the public sector.

The corporatization approach involves improving managerial incentives and clarifying budget constraints on public enterprises, so their performance improves without the government relinquishing ownership.

Demirgüç-Kunt and Levine study the relationship between the financial system and public enterprise reform. Their conceptual framework describes the role of three financial services — mobilizing resources, evaluating firms, and monitoring managers — in promoting both the private sector development and corporatization approaches to reform.

Using nine country case studies (of Chile, Egypt, Ghana, India, Mexico, the Philippines, the Republic of Korea, Senegal, and Turkey), they study the links between public enterprise reform and both financial sector reform and the initial state of the financial system. They reach three broad, tentative conclusions:

- Public enterprise reform is more successful in countries whose financial systems are relatively well developed and less successful in countries with relatively underdeveloped financial systems.
- Countries will be more successful in implementing large-scale public enterprise reform if they also implement substantial, well-designed financial sector reform.
- Successful reform of the financial sector generally involves implementing three components in the following order: building financial infrastructure, liberalizing the sector, and expanding the number of private financial intermediaries (removing impediments to the expansion of private intermediaries, downsizing public banks, and privatizing some public banks). Failure to implement any of these components severely jeopardizes the chance that financial reform will support public enterprise reform.

This paper — a product of the Finance and Private Sector Development Division, Policy and Research Department — was presented at a Bank conference on public enterprise reform. The study was funded by the Bank's Research Support Budget under the research project "The Changing Role of the State: Strategies for Reforming Public Enterprises" (RPO 678-69). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (63 pages).

1320. Capital Structures in Developing Countries: Evidence from Ten Countries

Asli Demirgüç-Kunt and Vojislav Maksimovic (July 1994)

Variables that predict capital structure in the United States also predict choices of capital structure in a sample of ten developing countries. In several countries, total indebtedness is negatively related to net fixed assets, suggesting that markets for long-term debt do not function effectively.

Demirgüç-Kunt and Maksimovic investigate capital structure in the largest publicly traded firms in ten developing countries — Brazil, India, Jordan, the Republic of Korea, Malaysia, Mexico, Pakistan, Thailand, Turkey, and Zimbabwe — for 1980–91.

The firms in the sample are smaller than comparable U.S. firms, and the financial systems and regulations in these countries differ significantly from those in the United States. Not every country has well-functioning liquid financial markets in which investors can diversify risks. Nor do all countries have efficient legal systems in which a broad range of property rights can be enforced.

Still, variables that predict capital structure in the United States also predict choices of capital structure in the countries sampled.

Variables suggested by agency theory explain more of the variation than variables suggested by tax-based theories. For both short-term and long-term equations in most countries, the asset structure, liquidity, and industry effects have more explanatory power than firm size, growth opportunities, and tax effects.

In several countries, total indebtedness is negatively related to net fixed assets, suggesting that markets for long-term debt do not function effectively.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to study emerging stock markets. The study was funded by the Bank's Research Support Budget under the research project "Stock Market Development and Financial Intermediary Growth" (RPO 678-37). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (38 pages).

1321. Institutions and the East Asian Miracle: Asymmetric Information, Rent-Seeking, and the Deliberation Council

Jose Edgardo Campos and Donald Lien (July 1994)

The deliberation council may be part of the reason rent-seeking is less of a problem in the high-performing Asian economies than in other developing economies. A council reduces information (transaction) costs by limiting the possibilities for opportunistic behavior. Opportunism reduces invest-

North (1984) argues that it is not the cost of transport but the cost of transactions that prevents economies from realizing well-being — and that institutions matter because they affect the costs of transactions.

Campos and Lien analyze the role of the *deliberation council* — an institution common to most of the high-performing Asian economies — in reducing the crippling effect of rent-seeking.

A deliberation council is a consultative committee whose members include high-ranking government officials and representatives from the private sector — usually from industry (especially big business) and academia, sometimes from consumer groups and labor. Councils can be organized by industry or sector (as with the Industrial Structure Council in Japan) or by theme or function (as with Thailand's Joint Public Sector-Private Sector Consultative Committee).

Generally the deliberation council has a quasi-legislative authority, and policies cannot be introduced or changed without its recommendation and approval. Unlike a legislative committee, its private sector representatives are not elected but are chosen (by industry or labor, for example, and not necessarily through voting) and its government officials generally become representatives by virtue of appointment to their present position.

Campos and Lien construct a two-stage incomplete information game model with two identical firms and various links to real-world processes. It is a highly simplified model that focuses on the awarding of government contracts.

They use the model to gain insight into the problem of rent-seeking in developing countries and to test their hypothesis. Rent-seeking occurs partly because people are uncertain about the intentions and plans of potential competitors — they engage in rent-seeking for fear that not doing so might give their competitors a huge advantage. To the extent that the council generates an exchange of information, this uncertainty is reduced, so one would expect less rent-seeking. Such exchanges reduce information (transaction) costs and thus improve efficiency.

The model confirms that firms are better off if they can communicate their true valuations to competitors than when they cannot. The deliberation council induces participants to reveal true information, and the model shows that the payoffs are better with communication than with-

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to apply tools developed in the New Institutional Economics to problems of institution building in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (18 pages).

1322. Reducing Regulatory Barriers to Private-Sector Participation in Latin America's Water and Sanitation Services

Barba.". Richard and Thelma Triche
(July 1994)

The regulatory conditions that private operators of water and sanitation services look for in deciding whether to participate in a bid.

The lack of an appropriate regulatory environment is a principal factor behind inadequate water and sanitation services in many parts of Latin America. Many governments recognize the need to improve cost recovery and accountability in services — and increasingly see private sector participation as a tool for improving efficiency and attracting commercial sources of investment finance.

Consultants interviewed representatives of private companies that recently contended for contracts to provide water and sanitation services in four Latin American cities (Buenos Aires, Caracas, Mexico City, and Santiago). These private operators identified the regulatory conditions they look for in deciding whether to participate in a bid. On the basis of the interviews, Richard and Triche identified nine conditions:

- Specify key terms and conditions of regulation in the contract, leaving little discretionary power to the regulating authority. In particular, specify the key aspects of regulation (such as price, quantity, and quality) in the contract.
- Spell out credible procedures for the fair resolution of disagreements about contractual or regulatory matters.
- Carefully specify credible technical objectives which the contractor will be expected to achieve under the contract.
- See that government tariff policies support the principle of cost recovery for water services — and that tariff adjustment formulas adequately reflect changes in costs, inflation, and the exchange rate.
- If historical collection rates do not indicate consumers' willingness to pay for services at tariffs that reflect the cost of service, allow an adequate period of time to phase in higher tariffs — and give the operator adequate protection from nonpayers (either the right to cut off service or recourse to another source of payment).
- Review public works law, contract law, and accounting practices and, if necessary, amend them in advance to ensure that they accommodate and protect any long-term investments foreseen under build-own-transfer or concession-type arrangements.
- Eliminate unnecessary and bureaucratic administrative requirements that make bidding expensive.
- Make a contract and expected profits big enough to warrant the high fixed cost of bidding.
- Provide the education and outreach needed to inform consumers and secure the support of labor interests.

In addition, the firms interviewed said that host countries would be better able to attract private-sector providers if they:

- Used reputable outside technical, legal, and financial advisors.
- Allowed local and foreign banks that finance investments to review and comment on proposed contracts and participate in negotiations.
- Reduced the cost of bidding for small contracts.

This paper — a product of the Water and Sanitation Division, Transport, Water, and Urban Development Department — is part of a larger effort in the department to formulate strategies for improving the efficiency of water supply and sanitation services. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mari Dhokai, room S4-001, extension 33970 (19 pages).

1323. Energy Pricing and Air Pollution: Econometric Evidence from Manufacturing in Chile and Indonesia

Gunnar S. Eskeland, Emmanuel Jimenez, and Lili Liu
(July 1994)

Energy pricing is a powerful indirect tool for reducing emissions. Whether it is attractive as one instrument among others depends on the costs of monitoring and enforcement associated with more direct instruments, such as emission taxes.

Sound public policy addresses externalities directly, when possible. Air pollution is best alleviated by policy instruments that internalize the social cost of pollution, making it attractive to reduce emissions.

One such instrument might be a tax levied on individual emissions, if they are measurable and if there is an accepted relationship between emissions and the damages to society. But such first-best solutions may not be feasible for many reasons, among them the cost of implementation. When first-best instruments are unavailable, indirect instruments, such as presumptive taxing of polluting inputs, may be a powerful alternative. Energy pricing is, for air pollution, one such indirect instrument.

Energy pricing policies affect emissions through fuel substitution and energy conservation. Eskeland, Jimenez, and Liu provide an empirical framework for measuring the magnitude of this impact and apply it to two cases: manufacturing in Chile and Indonesia. They find that:

- The responsiveness of emissions makes energy prices a powerful indirect tool for reducing emissions.
- There is room for substitution toward cleaner input combinations — both toward cleaner fuels and away from energy, toward labor, capital, and materials.
- Substitution toward cleaner fuels can also be induced without increasing energy prices generally, by increasing the price of the dirtier fuels, thereby reducing the relative price of the cleaner ones. But noncompensated price increases for the dirtier fuels, plus increases for all fuels, will be more powerful since they will also induce firms to reduce their overall energy use.

In exploiting interfuel substitution, it is important to assess the relative damage caused by different pollutants. In Indonesia, increases in coal prices could deliver reductions in particulate emissions, but in Chile they would not, because of a small own-price elasticity and a positive cross-price effect (though small) to electricity, a heavily-used source of energy that also produces particulate emissions.

Higher prices for pollution-laden fuels will generally reduce demand, as expected, but the net effect on emissions will depend on:

- Whether other fuels laden with the same pollutants are spared such price increases

• Whether their cross-price elasticities are positive.

• Which fuel shares are high.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to analyze pollution control policies in a welfare economic perspective. The study was funded by the Bank's Research Support Budget under the research project "Pollution and the Choice of Policy Instruments in Developing Countries" (RPO 676-48). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (33 pages).

1324. Voucher Funds in Transitional Economies: The Czech and Slovak Experience

Robert E. Anderson
(July 1994)

Voucher funds — akin to western mutual funds, except that shares are bought with vouchers not cash — appear to be influencing the governance of enterprises. This could be their most valuable contribution to economic reform.

Voucher funds have arisen in the transitional economies of Eastern and Central Europe that have used voucher privatization. These funds collect vouchers from citizens and use them to buy shares in enterprises.

In the Czech and Slovak Republics, voucher funds are typically organized as corporations owned by the citizens who contributed their vouchers. Recently, they have also been organized as unit trusts (either open-ended or closed). A management company manages the funds under a contract that specifies the management fee. The management company is typically owned by the initial sponsor of the fund — for example, a bank.

Voucher funds can give owners a diversified and professionally managed portfolio. More important, the funds select who sits on an enterprise's governance boards (which oversee management and profitability).

Although experience is limited, the funds in these two countries have probably stopped most fraud and self-serving by enterprise managers and are beginning to encourage the restructuring needed for poorly performing or dishonest managers; more often, because qualified replacements are few, they encourage managers to improve performance.

There have been complaints about funds' performance. Some have made unrealistic promises to voucher holders and have appointed poorly qualified members to management boards. There is concern about conflicts of interest in bank-sponsored funds and excessive control of enterprises. Funds typically lack capital or expertise to undertake restructuring — but few other potential owners are likely to be better qualified.

Anderson examines 27 regulations that have been proposed for funds. Regulations in transitional economies, unlike regulations in most western countries, should encourage funds to play a strong role in corporate governance, he contends, as few potential owners have this ability

Most important, regulations should require that funds disclose information about their operations so their owners can monitor and control fund managers.

The regulatory regime, he says, should discourage monopolies and anticompetitive behavior; create incentives for fund managers to improve fund performance; discourage self-serving or fraudulent behavior by fund managers, and conflicts of interest; and eliminate high-risk investments unacceptable to fund owners.

Because there is so little experience with these funds, the regulatory regime should not be unduly restrictive. As problems arise, regulations to deal with them can be added.

This paper is a product of the Europe and Central Asia and Middle East and North Africa Regions Technical Department, Private Sector and Finance Team. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faten Hatab, room H8-087, extension 35835 (47 pages).

1325. The Economics of Research and Development: How Research and Development Capital Affects Production and Markets and Is Affected by Tax Incentives

Anwar Shah
(July 1994)

A survey and synthesis of the theoretical and empirical literature on the economics

Certain themes and findings emerge from Shah's analysis of key relationships between research and development (R&D) and other factors. Among them,

R&D capital and the structure of production

• R&D capital facilitates the mapping of technological possibilities into economic opportunities.

• R&D takes time to accumulate and uses up scarce resources. The adjustment process from project initiation to product and process development typically takes three to five years.

• The marginal adjustment costs for R&D are higher than for plant and equipment.

• R&D capital is a complement to physical capital but is a substitute for labor in the long run.

• Output changes exert a much stronger influence on R&D capital than vice versa.

R&D capital and market structure

The value of cost-reducing R&D is determined by its profitability. Since private returns from R&D understate true social returns from such investments, R&D will be underprovided. And since R&D investments often represent large fixed costs, market structure in R&D intensive industries is going to be concentrated. This situation is, however, not unique to R&D. What is unique about R&D is the nature of spillovers. These spillovers reduce industry costs, but since they result in inappropriability of returns for the R&D performer, incentives to do R&D are reduced. Restoring appropriability does not help matters either because it results in industrial concentration, incorrect pricing of R&D, and higher social costs. Perfect appropriability may also result in excessive R&D because too many firms may be fishing for the same information.

The information asymmetry between an R&D performer and a financier distinguishes R&D investment from traditional risky investment. It is in the interest of the R&D performer to keep vital project information secret. But in the absence of detailed information, project financing may not be forthcoming. Asymmetric information also limits the R&D firm's ability to profit from its output.

Success breeds success. Since learning involves costs, successful firms possess an advantage over their rivals in enjoying greater possibilities for success. So, monopoly persists in the R&D capital market. Past successes from R&D invest-by successful firms. These firms tend thereby to produce further innovations and thus widen the gap between themselves and their rivals.

Much R&D capital is concentrated in large firms, but it is more likely that they have become large because of their R&D successes than that they do more and more fruitful R&D because they are large.

Public policy and R&D investment

- Most industrial nations see the need to intervene through the tax code to encourage R&D activities. Empirical evidence on the effectiveness of such initiatives is limited.
- An analysis of parameter estimates for a cost function of the Canadian industries suggests that R&D tax credits had a significant positive impact on R&D investment in Canada. For every dollar of revenue foregone for the national treasury, $1.80 worth of additional R&D investment was undertaken. This suggests that properly designed tax incentives can further public policy objectives cost-effectively.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a series of papers prepared for the research project "An Evaluation of Tax Incentives for Industrial and Technological Development" (RPO 675-10), that was funded by the Bank's Research Support Budget. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (85 pages).

1326. Banks, Capital Markets, and Corporate Governance: Lessons from Russia for Eastern Europe

Gerhard Pohl and Stijn Claessens
(July 1994)

The need for financial sector reform in the formerly socialist economies was recognized from the start, but views about how and when to proceed diverged. Too often, complex western models have been prescribed prematurely. Banking reform has progressed further in Russia than elsewhere, which supports the view that market factors should be allowed to do more in the transition than they have.

The financial sector should be active in enterprise restructuring in the transitional economies, and should help channel resources to the private sector. What will best help the sector achieve these tasks: gradual reform or radical reform?

Liberalization and privatization are the most urgent tasks transitional economies face. But for market reform to succeed, reforms of banking and capital markets must keep pace with enterprise reform and privatization.

Central and Eastern Europe have pursued a gradual approach to financial reform, splitting the former state bank (or "monobank") into a central bank and several large state-owned commercial banks, eventually to be privatized. Russia has taken a more radical approach, creating many new private commercial banks that have already taken over most of the business from state banks.

The reform of banks and capital markets in transitional economies should not be modeled too closely on patterns in western economies, with their large institutions, complex financial instruments, and extensive regulation. A simpler process is required, compressing in a short period the historical development of financial systems — starting with small banks and accepting imperfect regulation and supervision as a fact of life.

Systemic risks remain manageable if financial institutions are small and numerous enough. A system with many private banks is more likely to produce a financial sector that plays an active role in enterprise restructuring, channels resources to the private sector, and thus accelerates restructuring and economic growth.

Historical comparisons confirm the benefits of such a liberal, weakly regulated banking system.

This paper — a product of the Private Sector and Finance Team, Europe and Central Asia, and Middle East and North Africa Technical Department — is part of a larger effort in the department to analyze developments in the financial systems of transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Luz Hovsepian, room H8-093, extension 37297 (16 pages).

1327. Is the Debt Crisis History? Recent Private Capital Inflows to Developing Countries

Michael Dooley, Eduardo Fernandez-Arias, and Kenneth Kletzer
(July 1994)

The debt crisis may be sleeping rather than dead — and may well be aroused as interest rates rise again. Debt reduction and policy reform — including fiscal reform and privatization — improved access to capital markets in the 1990s for some developing countries that had debt servicing problems in the 1980s. Overall, however, access to capital markets depends mostly on international interest rates.

The outlook for economic development for an important group of middle-income countries has again been buoyed by substantial private capital inflows in the 1990s. As in the 1970s, this development has been met with cautious optimism.

It is generally accepted that these countries need resource transfers from the rest of the world to support capital formation and growth. It is also generally accepted that these private capital flows make the allocation of resources more efficient. But there is concern that a rapid reversal of market sentiment could impose considerable adjustment costs on these same economies.

Dooley, Fernandez-Arias, and Kletzer try to quantify what many consider to be the main reasons debtor countries have access to capital markets again:

- Domestic policy reform in the debtor countries.
- Debt and debt service reduction, usually associated with Brady Plan restructuring.
- Changes in the external market, such as changes in interest rates in industrial countries.

They argue that a useful barometer for access to new loans is the market value of existing sovereign debt. It follows that a quantitative analysis of the factors that caused the market value of sovereign debts to rise rapidly after 1989 would also improve understanding of the forces behind the renewed access to international capital.

Empirical historical evidence suggests that fiscal reform, privatization, and debt reduction are useful in explaining relative improvements in the standing of debtor countries in international credit markets. Debtor countries with strong reform programs, in other words, are better prepared to withstand deterioration in the external environment.

But the reduction in dollar interest rates since 1989 appears to be the chief factor in the debtor countries' renewed access to international loans. The authors estimate the effect of increases in dollar interest rates and conclude that the typical debtor country remains vulnerable to increase in interest rates that are well within the range of recent experience.

This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to analyze foreign investment in emerging markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheilah King-Watson, room S8-125, extension 31047 (30 pages).

1328. The Use of New York Cotton Futures Contracts to Hedge Cotton Price Risk in Developing Countries

Panos Varangis, Elton Thigpen, and Sudhakar Satyanarayan
(July 1994)

New York cotton futures and options contracts provide an effective way to reduce cotton price volatility, despite relatively high basis risk.

Cotton exports account for a significant share of commodity exports for some developing countries, especially in West Africa and Central Asia. In these countries, dependency on cotton for export revenues has increased in the past 20 years. These countries therefore have a high exposure to cotton price volatility.

Cotton-producing developing countries and economies in transition make little use of hedging mechanisms to reduce their risk from the volatility of cotton export revenues. Countries in Francophone West Africa use forward sales to hedge but only for a small share of the crop.

These countries could use cotton futures and options contracts to hedge against short- to medium-term price volatility, making cotton export revenues more predictable. Cotton futures and options contracts could also make cotton-related commercial transactions more flexible. (Futures could be sold when there are no buyers in the physical market, for example.) In West Africa, futures and options could complement the existing system of forward sales.

Varangis, Thigpen, and Satyanarayan examine the feasibility of using New York cotton futures and options contracts as hedging instruments. They base their analysis on a portfolio selection problem in which the hedger selects the optimal proportions of unhedged and hedged output to minimize risk.

The results suggest that despite the existence of relatively high basis risk (that is, a relatively low correlation between spot and future prices), hedging reduces cotton price volatility by 30 to 70 percent.

Moreover, for all varieties of cotton examined, the hedge ratio (the percentage of exports hedged) was below one. Using a hedge ratio of one (naive hedge), at times, increases rather than decreases risk.

The results also show that hedging, while reducing risk, also reduces expected returns. Attitudes toward risk — that is, the degree of risk aversion — determine how much of this risk-return tradeoff is acceptable. For a risk-averse agent, the main benefit of hedging lies in risk reduction rather than in the potential for increased returns.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to examine the benefits of using market-based risk management instruments in developing countries and economies in transition. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Gustafson, room R2-092, extension 33714 (28 pages).

1329. The Regulation and Supervision of Domestic Financial Conglomerates

David H. Scott
(August 1994)

If a conglomerate provides such financial services as banking, securities, investment management, and insurance, the various authorities responsible for each financial sector need an integrated approach to regulation and supervision.

Financial conglomerates are groups of financial institutions related by ownership or control. Specific regulatory and supervisory issues arise when financial services — such as commercial and retail banking, securities underwriting and trading, investment management, and insurance underwriting — are provided by a financial conglomerate structure.

Scott provides a handbook for authorities responsible for financial conglomerate regulation and supervision, identifying key issues, spelling out regulatory and supervisory alternatives, and describing both preferred solutions and alternatives. He makes reference to the regulatory framework adopted in the European Economic Community.

Among the main tools available to the authorities are prudential regulations, accounting consolidation, and consolidated supervision. Prudential regulations for financial conglomerates preferably would be applied on a uniform and fully consolidated basis. Alternatively, existing regulations applicable to different financial sectors can be modified, in particular to mitigate the potential that intragroup transactions overstate capital or earnings. Accounting consolidation of the financial entities in a group is a prerequisite for consolidated prudential regulation and improves the transparency of the group's financial position. The authorities should use consolidated supervision to ensure that the risks from all group entities are identified and assessed.

This paper — a product of the Financial Sector Development Department — is part of a larger effort in the department to facilitate improvement in financial sector regulation and supervision in the Bank's client countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Karin Waelti, room G8-010, extension 37655 (38 pages).

1330. Revenue Uncertainty and the Choice of Tax Instrument during the Transition in Eastern Europe

Delfin S. Go
(August 1994)

A temporary import surcharge may be the most effective way to mobilize resources in Eastern Europe.

Go examines the eroding tax base facing transitional economies by employing a framework that allows risk factors in assessing tax instruments.

In an uncertain world, he asks, which tax instruments should be used? He examines Eastern Europe's revenue problem, including the implications for public revenue of different causes of uncertainty—and investigates which taxes are "better" at generating revenue. He defines a "better" tax as one that has greater stability in a risky environment (that is, less variation in generating a target revenue) and has the least adverse impact on the economy (for example, on consumption).

Go employs the framework to explain much of the output and revenue fall in transitional economies. The terms-of-trade shocks from the collapse of the CMEA trade as well as the rigid but uncertain economic responses in transitional economies are all important factors.

The results of his model indicate that import tariffs are more effective than other traditional tax instruments in raising revenue, especially if real revenue is defined in dollar terms (the price anchor). The contraction in domestic output and prices and the devaluation of the real exchange rate needed in the transition are significant reasons that favor imports as a tax base over other revenue sources. To emphasize the transitory nature and reversibility of the policy recommendation, import tariffs should be implemented in the form of a temporary uniform import surcharge.

This conclusion seems to hold whether the government formulates tax policy with correct or incorrect expectations. But the choice of revenue target matters. All tax instruments will do almost equally well if the commonly used tax-to-GDP ratio is the target. But it is a misleading measure since the ratio does not reflect the immense erosion of domestic tax bases in the economy and how real revenue in absolute level may actually be decreasing rapidly as a result.

The revenue decline and uncertainty can also be viewed as a necessity toward downsizing the large state sector and in redirecting trade away from former nonmarket partners. The results emphasize that restoring revenue should never lead to maintaining subsidies toward nonprofitable state enterprises or other public spending no longer relevant in a market system. Doing so will only lead to unreasonably high taxation.

No less important is moving assets out of collapsing sectors, privatizing them, and making them productive again.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to develop tools for analyzing tax policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (37 pages).

1331. The Myth of Monopoly: A New View of Industrial Structure in Russia

Annette N. Brown, Barry W. Ickes, and Randi Ryterman
(August 1994)

Very large firms are more prevalent in the United States than in Russia. And there is little evidence in Russia of industrial concentration in national markets. Instead, barriers to competition in Russia arise as a result of highly segmented product markets. Consequently, traditional policy remedies appropriate for problems of concentration (such as antitrust policy and import competition) may be ill-advised or inadequate for addressing problems of imperfect competition in the Russian economy. The prescription for healthier competition: improve Russia's distribution system and facilitate the entry of new firms.

Discussions of economic reform in the Russian Federation are colored by the conventional view of Russia's industrial structure. Both in Russia and in the West, Russian industry is characterized as very large enterprises operating in highly concentrated industries.

Brown, Ickes, and Ryterman challenge the conventional view. They assess Russian industrial concentration by comparing the Russian industrial structure (as revealed in the 1989 Soviet Census of Industry) with that in the United States and other countries.

They find that very large firms are more prevalent in the United States than in Russia. This empirical fact suggests that *planners economized on the costs of central economic coordination not by building unusually large enterprises, but by not building very small enterprises.*

Their most important finding: That there is little aggregate or industry concentration at the national level in Russia. Monopolies and oligopolies actually account for only a small share of national employment and production.

Instead, *barriers to competition in Russia arise as a result of highly segmented product markets.* In large part, this segmentation can be viewed as a legacy of central planning. Under the prior regime, enterprises were highly isolated, divided along both ministerial and geographic lines. Presently, these barriers are reinforced by some features of the transitional environment that continue to undermine the efficient distribution of goods.

Brown, Ickes, and Ryterman conclude that the traditional policy remedies appropriate for problems of concentration (such as antitrust policy and import competition) may be ill-advised or inadequate for addressing problems of imperfect competition in the Russian economy.

They argue instead that *improving the distribution system and other market infrastructure that supports trade* and *facilitating the entry of new firms* should be the most critical elements of competition policy in Russia.

This paper — a product of the Environment, Infrastructure, and Agriculture Division, Policy Research Department — is part of a larger effort in the department to see what lessons can be learned about environmental protection from the U.S. experience. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Marañon, room N10-033, extension 39074 (30 pages).

1332. Poverty and Household Size

Peter Lanjouw and Martin Ravallion
(August 1994)

Empirical statements about the relationship between poverty and household size should be interpreted with caution. The empirical relationship is fragile and especially sensitive to differences in the welfare indicator used in measuring poverty.

The widely held view that larger families tend to be poorer in developing countries has influenced research and policies. But the basis for this "stylized fact" is questionable, argue Lanjouw and Ravallion. Widely cited evidence of a strong negative correlation between size and consumption per person is unconvincing, given that even poor households face economies of size in consumption.

Lanjouw and Ravallion find that the correlation between poverty and household size vanishes in Pakistan when the size elasticity of the cost of living is about 0.6. This turns out to be the elasticity implied by a modified version of the food-share method of setting scales.

By contrast, some measures of child nutritional status indicate an elasticity closer to unity.

Consideration of the weight attached to child versus adult welfare may help resolve the nonrobustness of demographic profiles of poverty. The authors show that the incidence of severe child stunting is more elastic to household size than their Engel curve estimate suggests, although the latter is still a fair predictor of child wasting.

A consideration of the purpose of measuring poverty — notably the extent to which it is used to inform policies aimed at promoting child welfare — may go some way toward resolving the issue.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to assess the robustness of policy conclusions to measurement assumptions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (34 pages).

1333. A Test of the International Convergence Hypothesis Using Panel Data

Norman V. Loayza
(August 1994)

This model for estimating an economy's rate of convergence to its own steady state uses a neoclassical Solow model and accounts for the presence of country-specific effects. The estimated rate of convergence is 0.0494, implying a half-life of about 14 years.

Loayza, using a neoclassical Solow model, estimates an economy's rate of convergence to its own steady state. Using panel data for a sample of 98 countries, he applies Chamberlain's (1984) estimation procedure to account for the presence of country-specific effects resulting from idiosyncratic unobservable factors. This procedure also prevents the estimation bias due to measurement error in GDP.

Controlling, additionally, for the country's level of education, he estimates the rate of convergence to be 0.0494, which implies a half-life of about 14 years.

This estimated rate of convergence is about two and a half times higher than those obtained by Barro and Sala-i-Martin (1992) and Makiw, Romer, and Weil (1992). Loayza claims that those estimates are biased toward zero because they fail to account for country-specific effects.

Finally, he estimates the capital share in production to be 0.347, which is very close to the accepted benchmark value.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand the determinants of economic growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (30 pages).

1334. Taxation, Public Services, and the Informal Sector in a Model of Endogenous Growth

Juan Braun and Norman V. Loayza
(August 1994)

The informal sector exists when overregulation (high tax rates and a high cost for entering the formal sector) is coupled with an inefficient and corrupt system of compliance control. Informality adversely affects economic growth because the contribution of public services to productivity decreases as the informal sector expands.

Large informal sectors are an important characteristic of developing countries. Braun and Loayza build a dynamic model in which the informal sector exists when overregulation (high tax rates and a high cost for entering the formal sector) is coupled with an inefficient and corrupt system of compliance control.

They consider a production technology in which public services are essential and subject to congestion. The public services are financed by taxes collected from the formal sector. Informal producers evade taxes and, because of their illegal status, can use only some public services, cannot use capital or insurance markets, and are subject to stochastic penalties.

Braun and Loayza find that the relative size of the informal sector is negatively related to the severity of the penalties and positively related to tax rates and the extent of informal use of public services.

They also find that economies with larger informal sectors have lower capital return and growth rates because the contribution of public services to productivity decreases with informality.

They argue that self-interested bureaucracies create an economic environment that makes informality attractive or simply unavoidable because they profit from the presence of the informal sector.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to study the effects of regulation on inequality and economic growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (39 pages).

1335. Labor Regulations and the Informal Economy

Norman V. Loayza
(August 1994)

Labor regulations that mandate a minimum wage above market levels induce the formation of an informal sector and thus the dispersion of wages across homogeneous workers. Labor regulations also slow capital accumulation and retard the process of rural-urban migration.

The informal economy, which evades labor regulations, provides employment for much of the labor force in developing countries. Loayza explores how labor regulations and imperfections in informal capital markets affect income inequality and the speed of industrialization.

Empirical evidence shows that labor costs are higher in the formal sector, and that the cost of capital is higher in the informal sector (in part because many informal activities are illegal, so contracts are unenforceable). Loayza develops a theoretical model based on such factor-cost asymmetry. He applies it to an urban economy with and without ample supplies of labor from the rural sector. The dynamic analysis considers rural-urban migration and optimal capital accumulation. His findings:

- Labor regulations that mandate workers' compensation above its market-dictated level induce the formation of an informal sector and thus the dispersion of wages across homogeneous workers. And labor regulations slow capital accumulation and retard the process of rural-urban migration.
- When capital allocation to informal producers becomes more efficient, the informal sector expands relative to the formal sector, the gap between formal and informal wages narrows, and rural-urban migration speeds up.
- Policies with an urban bias hasten rural-urban migration, inducing an ex-

pansion of the informal labor force relative to the total labor force.

Post–World War II experience in informal economies in Latin America motivates and in some respects supports the theoretical findings, says Loayza.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to study the effects of regulation on inequality and economic growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39065 (46 pages).

1336. Modernizing Payment Systems in Emerging Economies

Robert Listfield and Fernando Montes-Negret
(August 1994)

An overview of payment systems in developing countries and transitional formerly socialist economies, designed to raise awareness of the challenges faced by central and commercial banks and by the World Bank in developing or modernizing payment systems.

Listfield and Montes-Negret address the following questions in this overview of payment systems: What is a payment system? How can efficient systems contribute to the development of modern, market-based financial institutions and markets? What elements are necessary for payment systems to operate efficiently? What are the operational characteristics of a modern payment system? What is the central bank's role? What problems do countries face when developing payment systems? What is the World Bank approach to selected payment system initiatives, design, and development?

Effective, efficient payment systems, they conclude, are vital for the economic development of emerging economies. Efficient payment systems help promote the development of commerce, enhance economic policy oversight, control the risk inherent in moving large values, and reduce the financial, capital, and human resources devoted to the transfer of payments.

Many emerging economies lack the financial and technical resources to develop such systems. Many turn to the World Bank and other international agencies for assistance. Unfortunately, some believe that the entire solution for an effective payment system rests in obtaining modern computer hardware and believe the World Bank's sole contribution is to finance hardware costs. Hardware procurement alone will not solve problems of payment systems.

These countries need organizational plans and structures for national payment systems before they spend money on computer equipment. They often lack the expertise to design and operate modern payment systems, so they may need technical assistance from financial experts before they invest in systems development.

The design of a new payment system should be kept simple. Many emerging economies lack the infrastructure and banking sophistication to leapfrog from basic to state-of-the-art payment systems. The first task is to fix the most serious problems. The second is to upgrade the current systems incrementally, to meet basic standards of timeliness, security, and reliability. As these improvements are made, the countries can turn their attention to long-term, advanced solutions.

Each country's payment system is unique. To simply import another country's system without adjusting for the target country's geography, infrastructure, banking and legal structures, culture, and needs could lead to suboptimal solutions. Development of the system should follow a disciplined plan for defining the needs of users and for organizing the project team and project goals.

This paper — a product of the Financial Sector Development Department — is part of a larger effort in the department to examine factors constraining the development of countries' financial infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tara Mailei, room G8-155, extension 87347 (43 pages).

1337. The Countrywide Effects of Aid

Howard White and Joke Luttik
(August 1994)

How are we to analyze the countrywide effects of aid — especially its macroeconomic impact and its effects on social and environmental variables?

There are three main approaches to analyzing the effects of aid money and aid-supported reform:

- Before-and-after comparisons
- Control group (simple and modified) studies
- Modeling.

All three approaches have been used to carry out macroeconomic analysis of policy reform. But before-and-after and simple control group approaches are *not* valid explanatory techniques, say White and Luttik; the results may be used to describe what happened, but not *why* it happened.

Theoretically, the modified control group is the strongest approach. In practice, it has many shortcomings — in particular, its failure to allow for the effects of aid and other capital flows as an explanatory variable.

The macroeconomic impact of aid inflows is best understood within the context of an accounting framework, say White and Luttik. The literature on the macroeconomic effects of aid funds has relied almost entirely on modeling. But much work has used only single equations, so that many potentially important relationships — notably aid's effect on output and income — are excluded from the analysis. Even the simultaneous models used are mostly partial, not general, equilibrium models — which makes the findings doubtful. And much of the empirical work suffers from methodological shortcomings. Much research is needed on how aid affects the private sector macroeconomically; more is known about how to analyze the public sector's response to aid inflows.

The analysis of aid money and aid-supported policy reform can be incorporated into a single framework — but with the effects of each clearly separable. White and Luttik favor a country-specific modeling approach because it allows the separate analysis of policies and money as well as the separate analysis of different policies. Country-specific analysis can capture local factors that may be omitted from cross-country analyses.

They argue that counterfactual analysis using econometric or general equilibrium models may be the most legitimate approach to analyzing the relationship between poverty and economic reform. Modeling has yielded results quite different from the common view about the social impact of reform policies, they say, but existing models fail to incorporate aid as an important macroeconomic variable.

Project aid, program aid, commodity (mainly food) aid, and technical assistance are the four main types of aid. One problem in much of the literature is that an aggregate aid figure is used, even though the macroeconomic repercussions of these different types of aid will differ.

Much analysis is also flawed by considering the effects of a "program" (despite different intensities and compliance rates) rather than the policies implemented.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a Bank-wide effort investigating aid effectiveness. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (130 pages).

1338. Commodity Exports and the Adding-Up Problem in Developing Countries: Trade, Investment, and Lending Policy

Maurice Schiff
(August 1994)

Free trade in commodities maximizes world welfare, but it does not maximize income or welfare for countries with power on the world market (such as Brazil for coffee and Côte d'Ivoire for cocoa). So what policy should commodity-producing countries pursue? What advice should multilateral banks offer about trade and investment policy? And what commodity lending policy should they pursue?

Multilateral development banks, including the World Bank, have advocated free trade policies for developing countries, including free trade in commodities. But although free trade in commodities maximizes world welfare, it does not maximize income or welfare for countries with power on the world market (such as Brazil for coffee and Côte d'Ivoire for cocoa).

If the reference group selected is developing countries as a whole, or the coffee- or cocoa-producing countries, free trade is not optimal for those commodities. Multilateral development banks that have supported the coffee and cocoa agreements in the past recognize this. And the World Bank has imposed lending restrictions on coffee, cocoa, tea, and sugar for fear that added investments would result in lower terms of trade and lost income.

Given that free trade is not optimal and that some restrictions on output and investment might be desirable, Schiff addresses the following issues: What policy should commodity-producing countries pursue? What advice should multilateral banks offer about trade and investment policy? And what lending policy should multilateral banks pursue?

The following principles guide his analysis:

- The fact that a country has power on the world market for a specific commodity does not mean that it should not proceed with general reform. The theory of the second-best says that distortions should be attacked at the source. So countries should proceed with stabilization and trade and domestic liberalization policies and should apply optimal export taxes to those commodities in which they have market power.
- In their advice on trade and investment policies, and in their lending policies, multilateral development banks should not use a country-by-country approach but should take spillover effects and strategic interactions into account.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to understand international trade problems in the presence of strategic interaction. The study was funded by the Bank's Research Support Budget under the research project "Commodity Exports and Real Income in Africa" (RPO 676-70). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Kim, room R2-042, extension 33715 (33 pages).

1339. China's Emergence: Prospects, Opportunities, and Challenges

Andrea Boltho, Uri Dadush, Dong He, and Shigeru Otsubo
(August 1994)

Barring major disruptions, China is bound to be the world's most dynamic growth pole — and could become one of the world's largest economies, if not the largest, by the year 2020. Preserving open trade relations is in the best interest of both China and the United States.

Boltho, Dadush, He, and Otsubo examine how the economic interactions between rapidly emerging China and the rest of the world may evolve over the coming two decades.

They discuss China's growth potential, drawing a parallel between China's rise and the historical rise of Britain, Japan, and the United States. Barring major disruptions, they contend, China could become one of the world's largest economies, if not the largest, by the year 2020.

Industrial countries, especially Japan and the United States, are expected to benefit because their trade structure complements China's. Developing countries, especially exporters of labor-intensive manufactured products, are likely to be put under competitive pressure.

The authors argue that it would be advantageous for China to embark on the traditional strategy of a follower country — that is, to run current account deficits and use foreign resources to supplement domestic investment.

Should foreign direct investment continue at its recent rate, China may have to cope with overfinancing of its current account deficits. The authors argue for a development strategy that projects a sustainable growth rate with somewhat higher current account deficits and, therefore, somewhat higher levels of consumption and lower domestic savings, and a toning down of a policy bias that favors coastal regions. Such a strategy would lift consumption standards more rapidly. It would also defuse some of the social tensions generated by the unequal development of different regions.

As for the country's vulnerability to the external environment, the authors argue that in the long run China is resilient in the face of adverse external developments, especially those coming from outside Asia. In the short term, however, adverse external shocks could threaten the macroeconomic stability important to reform. A simulation analysis of China's loss of most-favored-nation status in the United States confirms this assertion.

The authors conclude that preserving openness is in China's best interest and that the United States in particular stands to gain much in the longer run if it maintains open trade relations with China. Adversarial U.S. policies could encourage China, Japan, and other Asian countries to prefer intraregional trade, possibly excluding the United States from full participation in what is bound to be the world's most dynamic growth pole.

This paper — a product of the International Economic Analysis and Prospects Division, International Economics Department — is part of a larger effort in the department to examine changing external links and the impact of external shocks on low- and middle-income countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jacquelyn Queen, room S8-035, extension 33740 (28 pages).

1340. Opportunity Cost and Prudentiality: An Analysis of Futures Clearinghouse Behavior

Herbert L. Baer, Virginia G. France, and James T. Moser
(August 1994)

A futures clearinghouse sets margins to minimize its membership's collective costs of trading. These costs have two sources — the deadweight costs incurred when a member defaults, and the opportunity costs incurred when members are required to post margin to insure against default. This simple framework yields insights about the impact of netting, monitoring, expulsion, the opportunity cost of margin, and volatility on default risk and margin levels. Empirical analysis suggests that opportunity cost is an important factor in margin setting.

Margin deposits, which serve as collateral to protect the clearinghouse, are typically the most important tool for risk management. Baer, France, and Moser develop a model that explains how creating a futures clearinghouse may allow traders simultaneously to reduce both the risk of default and the total amount of margin that members post. Optimal margin levels are determined by the need to balance the deadweight costs of default against the opportunity cost of holding additional margin. Both costs are a consequence of market participants' imperfect access to capital markets.

The simultaneous reduction in default risk and in the opportunity cost of margin deposits is possible because the creation of the clearinghouse facilitates multilateral netting. The authors characterize the conditions under which multilateral netting will dominate bilateral netting. They also show that it is credible for the clearinghouse to expel members who default, further reducing the risk of default. Finally, they show that it may (but need not) be optimal for the clearinghouse to monitor the financial condition of its members. If monitoring occurs, it will reduce the amount of margin required, but need not affect the probability of default.

The empirical tests run by Baer, France, and Moser indicate that the opportunity cost of margin plays an important role in determining margin. The relationship between volatility and margins indicates that participants face an upward-sloping opportunity cost for margin, which appears to more than offset the effects that monitoring and expulsion would be expected to have on margin setting.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to analyze the role of financial institutions in market economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-059, extension 37644 (45 pages).

1341. Explaining Pakistan's High Growth Performance Over the Past Two Decades: Can It Be Sustained?

Sadiq Ahmed
(August 1994)

Pakistan's 6 percent annual growth rate sustained for two decades has been a development puzzle. What factors explain Pakistan's rapid growth? And can it be sustained if Pakistan does not address problems of high fiscal and current account deficits, relatively low savings and investment rates, and poor human capital formation?

Using standard statistical growth analysis, Ahmed shows that Pakistan's growth is the result of:

- Rapid capital accumulation. Pakistan's investment rate was relatively low but its fixed investment rate grew steadily in the 1970s, stabilizing at about 17 percent of GDP in the mid-1980s.
- Growth of the labor force, which offset a tendency toward capital intensity of production.
- More competition from external trade.
- A policy of economic liberalization since 1978.

Pakistan was able to sustain high growth and avoid a financial crisis — despite large deficits — because real interest rates on debts were substantially negative in the 1970s, so debt-to-GDP ratios continued to decline. But real interest rates turned positive in the 1980s. If Pakistan continues to have fiscal deficits of the same magnitude as in the past, a financial crisis will quickly emerge. Pakistan cannot avoid a debt crisis by creating money. Higher inflation will hurt resource allocation and income distribution.

To guard against reduced growth, weakened export performance, and higher real interest rates, Pakistan should reduce its fiscal deficit to below 4.5–5 percent of GDP and phase out quasi-fiscal deficits.

Pakistan needs more balanced use of fiscal, monetary, and exchange rate policies. Putting the burden of external adjustment fully on the real exchange rate, as Pakistan tried to do in the past, is inconsistent with improvements in external balance. Real exchange rate depreciation imposes capital losses on the stock of external debt. The real exchange rate should be set at an appropriate level, and monetary and fiscal policies should be used to adjust demand.

A substantial adjustment effort will be needed to increase domestic savings and investment rates. National savings should increase from 14 percent of GDP to 20–22 percent of GDP. Raising public revenues and reducing public consumption will achieve public savings of 3–4 percent of GDP (savings are negative now). Public investment should focus on areas (such as physical infrastructure and human development) that promote private investment, economic growth, and equity.

To contain the fiscal cost of domestic borrowing, Pakistan has pursued a policy of financial repression, which has repressed the private credit and investment needed for long-term growth. Also needed is more rapid progress in human capital development, especially investments in women's health and education. To compete internationally in manufacturing requires more skilled production and a better-educated workforce than Pakistan has had.

This paper — a product of the Office of the Director, South Asia Country Department III — is part of a larger effort in the department to analyze the nature and extent of the adjustment challenges faced by Pakistan in the 1990s. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Ann Bhalla, room D10-071, extension 84440 (47 pages).

1342. Winners and Losers in Transition: Returns to Education, Experience, and Gender in Slovenia

Peter F. Orazem and Milan Vodopivec
(August 1994)

Returns to human capital — education and experience — rose dramatically in the transition. Women gained relative to men in both wages and employment.

Orazem and Vodopivec identify winners and losers in Slovenia's economic transition by tracing changes in returns to education, experience, and gender and changes in wage inequality from 1987 to 1991. They find that:

- Relative wages and employment rose for the most educated and fell for the least educated, in all industries.
- Relative wages and employment rose with years of work experience until pensionable age.
- At pensionable age, relative wages increased very rapidly and relative employment was greatly reduced. Using pension policies to encourage early retirement drastically reduced the supply of very experienced workers. Either the policy caused firms to bid up wages for workers of pensionable age to keep them from retiring, or it caused a selection process in which only the highest-paid workers remained in the workforce. Regardless, the pension policy has proved to be costly, and early retirements did not make room for the youngest workers but for those just under pensionable age.
- Women gained relative to men in both wages and employment primarily because they occupy education and industry groups less adversely affected by the transition, not because of economywide reductions in discrimination against women.
- Increasing returns to education and experience contributed to wage inequality, but the variance in wages also increased for individuals with identical skills. Big changes in relative wages should signal future reallocation of labor toward more productive, higher-paying sectors.
- Setting minimum wages, fixing ranges of pay, and indexing wages to inflation did not prevent increases in wage variation from occurring. Wage minimums did not appear to have an effect, presumably because inflation reduced real minimum wages so quickly that most workers were paid above the minimums.

In Slovenia, policy changes are reflected in labor market outcomes. Disabling the tax-transfer policy from relatively profitable to relatively unprofitable firms and eliminating worker referendums on wage scales removed mechanisms that tended to compress wage variation. Greater demand for skilled workers also reflected both the economywide need to cope with uncertainty and such industry-specific factors as reduced labor demand, especially in less skill-intensive industries.

The results in Slovenia contrast sharply with those in eastern Germany. Eastern German workers have had decreasing returns to education and experience. But it is not clear how relevant the eastern German experience is to other transitional economies because of western Germany's efforts to alleviate problems. More similar to Orazem and Vodopivec's findings are the results of Flanagan (1993) on the Czech Republic, which show increasing returns to education but decreasing returns to experience.

In some respects, Slovenia is atypical because it is richer and more western in orientation than other transitional economies. But those economies could learn from the experience in Slovenia because Slovenia also had social ownership, full employment coupled with substantial hidden unemployment, and an egalitarian wage structure. And Slovenia has introduced labor market reform and experienced social dislocations similar to those in other transitional European economies.

This paper — a product of the Transition Economics Division, Policy Research Department — is part of a larger effort in the department to investigate labor markets in transitional economies. The study was funded by the Bank's Research Support Budget under the research project "Labor Market Dynamics during the Transition of a Socialist Economy" (RPO 677-20). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Walker, room N11-023, extension 37466 (50 pages).

1343. Strategic Interdependence in the East-West Gas Trade: A Hierarchical Stackelberg Game Approach

Wafik Grais and Kangbin Zheng
(August 1994)

This Stackelberg game provides a framework for analyzing the strategic moves of three players in the East-West gas trade — a Western importer, a transiter, and a Russian supplier as the game leader — and gaining insights into their predictability.

The current and potential benefits of the East-West gas trade are enormous for all participants. Realizing those benefits requires significant upfront investments. But the new, more complex structure of the gas transit system that has emerged following changes in Eastern Europe and the former Soviet Union has created uncertainties that bear on the expected benefits from investments.

Grais and Zheng argue for the existence of stable contracts that would create an environment more conducive to investments and allow all participants to benefit from expansion of the gas trade.

As a guide to formulating incentive-compatible, transparent, flexible contracts, they propose a framework based on a Stackelberg game, with three players (a supplier, a transiter, and an importer) under Russia's leadership. They use this framework to analyze the contract modifications that would ensue from changes affecting the gas trade. They conclude that:

- Increased competitiveness of the transiter and supplier through cost reductions would improve the payoffs to all players (the transiter's and supplier's profits and the Western importer's welfare). Strategic behavior on the part of the supplier and transiter would ultimately reduce the price to the importer, enlarging gas demand and reducing costs. If increased competitiveness is the outcome of more costly gas from sources other than Russia, both the supplier's and the transiter's payoffs would improve but the importer's welfare would deteriorate. The supplier and transiter would have leeway to strategically raise their price and transit fee, respectively, while gaining market share. But the importer would face rising costs for gas imports and would lose welfare.

• An increase in the scope for the importer to substitute between alternative sources of gas improves welfare for all three players. The perception by the supplier and transiter of increased threat of competition leads to a preemptive move not to lose market share. The transiter and supplier reduce the transit fee and supply price, respectively, allowing the importer to face a lower gas price. Import demand expands and welfare improves. The expanded trade more than compensates for the reduction in the transit fee and supply price and allows larger payoffs for transiter and supplier.

• The perception of increased reliability of Russian gas supplies expands demand for Russian gas and leads to the expansion of trade. The supplier and transiter can raise their respective charges with expanded volume, improving their payoffs. The importer's welfare deteriorates as the cost of importing gas rises.

The predictability of the players' reactions to changes in the environment would build confidence in the reliability of gas trade and allow its expansion, benefiting all participants.

This paper — a product of Europe and Central Asia, Country Department IV, Country Operations Division 2 — is part of a larger effort in the region to address the issues in the energy sector raised by the collapse of the former Soviet Union and the transition to market economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kangbin Zheng, room H2-092, extension 36974 (22 pages).

1344. Which Foreign Investors Worry About Foreign Exchange Risk in South Asia and Why?

Eric Bond and Antonio Estache
(August 1994)

In the long run, competitive forward exchange markets are better than government guarantees against exchange risk. They benefit both host-country and foreign firms and increase investment from both sources.

Bond and Estache show that the potential benefits to a host country of forward markets or of foreign exchange guarantees depend on the investor's country of origin and on specific characteristics of the investment. They show this in terms of the effects on foreign-exchange risks and on the amount of foreign direct investment taking place.

Their main lessons for foreign investors:

• The benefits of hedging exchange risks through forward markets vary substantially, depending on the investor, the type of investment, and, for foreign direct investment (FDI), the direction of the market supplied.

• For short-lived investment or FDI targeted to the host country market, the potential for gain from forward contracts is substantial because in the short run, *nominal* exchange rate fluctuations tend to be larger than *real* exchange rate fluctuations.

• For long-lived investments or export-oriented FDI, the gains from forward contracts will be much smaller. Firms investing in long-lived assets or in activities targeted to exports get natural insurance from the correlation between the nominal exchange rate and the firm's earnings in host-country currency.

• The evidence on exchange rate and price fluctuations between 1975 and 1991 suggests that the demand for coverage is likely to be stronger in South Asia than in Latin America. In East Asia, the evidence is mixed.

Their main lessons for host country governments:

• In the short run, if there are no private forward markets, the optimal policy for a risk-neutral host country is to provide the firm with forward contracts at the expected spot exchange rate. This government insurance has the same effects as allowing trading in forward markets. But these contracts can have fiscal consequences, as they did in Latin America.

• Forward markets do not discriminate against host-country firms. Those engaged in international trade can also benefit from the presence of forward markets.

• In the medium run, as exchange controls are being liberalized, forward markets may be slow to develop because of participants' uncertainty about their ability to get foreign currency to cover forward commitments. In this transitional period, contracts offered by the government are likely to be the most efficient means of reassuring foreign investors. These contracts should also be made available to host-country firms during the transitional period, in order not to discriminate against domestic investors.

This paper — a product of the South Asia Regional Office, Office of the Chief Economist — is part of a larger effort in the Bank to address issues that cut across countries in the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Antonio Estache, room Q7-123, extension 81442 (33 pages).

1345. The Decentralization of Public Services: Lessons from the Theory of the Firm

Jacques Cremer, Antonio Estache, and Paul Seabright
(August 1994)

Questions about decentralization in government are questions about the allocation of control rights. How much to decentralize depends on which level of government will have the most incentive to bring about desired outcomes.

The literature on the theory of the firm is rich in theoretical and practical insights. The key messages in this overview are the following:

• The modern theory of the firm provides many insights into political organization, for political jurisdictions can be viewed as pseudo-firms that provide services and that group together various kinds of decisionmaking activities.

• Questions about decentralization in government are questions about the allocation of control rights. If contractual relations were complete, it would not matter whether power were decentralized, as contracts would specify everything to be done at each level of government. There would be no need for discretion.

• How much to decentralize depends on which level of government will have the most incentive to bring about desired outcomes. Centralized governments may be better at coordinating things but tend to be less accountable than decentralized governments (with important exceptions).

• The organizational design of government affects not only incentives to make decisions but also incentives to gather the information on which those decisions are based.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994* on infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Antonio Estache, room Q7-123, extension 81442 (51 pages).

1346. Linking Competition and Trade Policies in Central and Eastern European Countries

Bernard M. Hoekman and Petros C. Mavroidis
(August 1994)

Enforcement of competition law and liberalization of trade are important elements of the transition to a market economy. Competition policy can be designed to support a liberal trade policy stance.

Hoekman and Mavroidis explore options for Central and Eastern European (CEE) governments to make competition law enforcement more sensitive to trade and investment policy, thereby supporting liberal trade policy.

The competition laws of these countries tend to resemble European Union (EU) competition disciplines (Articles 85–86 of the Treaty of Rome), but give competition authorities great scope for discretion in interpreting the relevant statutes. Much can be done through appropriate wording of criteria and implementation guidelines within the framework of existing legislation to subject trade policy to competition-policy scrutiny.

A liberal trade policy and active enforcement of competition laws will be crucial not only for national welfare, but also for eliminating the threat of contingent protection by EU firms. When CEE countries face antidumping threats or actions from EU countries, Hoekman and Mavroidis suggest that they seek a link between competition law enforcement and antidumping investigations in the context of the association agreements with the European Union. That is, the European Commission could be asked to apply competition policy criteria in antidumping investigations against products originating in CEE countries, ensuring that there is a threat to competition, not just a threat to a European Union competitor. This treatment could be sought informally during the transitional period.

Generally, since the CEE countries have adopted competition legislation comparable to that of the European Union, it seems safe to assume that if they enforce their competition laws vigorously, EU-consistent minimum standards will be respected.

Until the association agreements are fully implemented, it is important to reduce to a minimum the risk of being treated as an "unfair trader." Safeguard actions will remain possible until EU membership has been attained. But safeguard protection is more difficult to seek and obtain if there is only a weak case for arguing that Central and Eastern European firms are benefiting from trade barriers, state aids, or various government-maintained entry barriers.

This paper — a product of the Europe and Central Asia, Middle East and North Africa Regions Technical Department, Private Sector and Finance Team — is part of a larger effort to monitor and analyze developments in regional and global trade policy of relevance to the Europe and Central Asia and the Middle East and North Africa regions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faten Hatab, room H8-087, extension 35835 (43 pages).

1347. Antitrust-Based Remedies and Dumping in International Trade

Bernard M. Hoekman and Petros C. Mavroidis
(August 1994)

A proposal that governments apply competition-policy-based disciplines to unfair-trade allegations before turning to "standard" antidumping remedies.

Hoekman and Mavroidis explore the possibility of governments' seeking to agree to apply competition-policy-based considerations and disciplines in addressing unfair-trade allegations before turning to "standard" antidumping remedies.

The premise of proponents of antidumping actions is that the existence of market power in exporters' home markets, or potential market dominance in the importing (host) market, is an important source of perceived "unfairness." But antidumping authorities do not investigate the existence of such situations.

Hoekman and Mavroidis propose that allegations of dumping first be investigated by competition authorities to determine the contestability of the relevant markets. Their proposal does not involve harmonization of competition laws.

All that would change from the status quo is that a necessary condition for an antidumping action is that competition authorities find that the exporting firm's home market is not contestable, and conclude that no remedial action is possible through the application of competition law.

Ideally, agreement along these lines would be sought in the multilateral (GATT) context, but bilateral or regional trade agreements could also be concluded. For example, European Union cooperation or association agreements might be extended along the lines proposed.

This paper — a product of the Europe and Central Asia, Middle East and North Africa Regions Technical Department, Private Sector and Finance Team — is part of a larger effort to monitor and analyze developments in global trade policy affecting the Europe and Central Asia and the Middle East and North Africa regions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Faten Hatab, room H8-087, extension 35835 (29 pages).

1348. Quality Change and Other Influences on Measures of Export Prices of Manufactured Goods

Robert E. Lipsey
(August 1994)

The long-run rise in prices and in terms of trade for exports of manufactured goods has been overestimated because measures of export prices for manufactured products, including the U.N. export unit value index, are biased upward. In particular, they fail to account adequately for improvements in the quality of exported manufactured goods.

Measures of long-term trends in world export prices for manufactured goods, and in the terms of trade between manufactured goods and primary products, are sensitive to many choices in methods for weighting indexes, base periods, and (most important) changes in quality. For example:

• Weighting products by their importance in exports to developing countries, rather than by their importance in exports to all countries, reduces the estimated rate of increase in prices for manufactured goods by about 0.1 or 0.2 percentage points a year.

- A shift in weights from those of an early year (1963) to those of a recent year (1986) reduces the rate of increase in prices by about a third of a percentage point a year.
- Export price indexes with weights of Japanese exports grow about 0.2 to 0.4 percentage points a year less than one weighted by the U.S. export composition, with the larger difference for indexes based on 1963 weights.
- Adjusting the price index for exports of machinery and transport equipment for quality changes not accounted for in the price indexes reduces the rate of increase for those products by about one percentage point a year, and that adjustment for only those products reduces the estimated rate of increase in prices for all manufactures by about half a percentage point a year.

Conservative estimates of the bias in the most commonly used measure of export prices of manufactured products — the U.N. export unit value index for manufactures — suggest that this measure overstates the long-run rise in prices for manufactured goods by more than half a percentage point a year, probably one percentage point or more. If so, there has been no long-term trend toward the prices of manufactured goods rising faster than prices for primary products.

However, no conceivable estimate of bias in measures of prices for manufactured goods would reverse the picture of declining relative prices for primary products in the 1980s.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze the role of commodities in the development process. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (26 pages).

1349. The New Regionalism and the Threat of Protectionism

Andrew Hughes Hallett and Carlos A. Primo Braga
(August 1994)

A multilateral trade system inhibits noncooperative behavior among trading blocs. The successful conclusion of the Uruguay Round extended and deepened the network of variables covered by multilateral rules. For developing countries, a working (even imperfect) multilateral trade system remains the best hope against excesses by those with market power.

Drawing on game theory concepts, Hallett and Primo Braga discuss why countries form themselves into trading blocs and what the relations between these blocs are likely to be.

They identify three types of trade regime:

- Unilateral trade policies — which are noncooperative.
- Multilateral agreements (such as the GATT) — which are cooperative.
- Coalitions (regional integration arrangements or minilateral agreements) — which are mixed (cooperative internally and noncooperative externally).

They argue that regional integration arrangements can work better than global rules as precommitment devices for internally cooperative policies because they create a denser network or interlinked policy targets. The losses for a participant ostracized (or disciplined) by his bloc are immediate and tangible.

Crucial to the results of analysis is the external policy stance adopted by each bloc after it has formed. External relations will determine whether regional blocs are welfare-improving, consistent with the aims of the GATT, and a vehicle for securing commitments to the regime; or whether they will become a vehicle for spreading "political economy biases."

Should higher or lower external barriers be expected for nonmembers? That depends on how large the benefits or costs, in trade and investment creation (or diversion), would be to members if the move to free trade within the bloc is not accompanied by any increase in the bloc's external barriers (an "open" bloc). Widening tends to be easier the more open a bloc is, since insiders are less concerned with the erosion of their preferences.

In the alternative scenario, lower intrabloc trade and investment barriers are accompanied by an increase in the external barriers, giving any specific set of potential participants strong incentives to join (a "closed" bloc). "Deepening" by expanding the list of variables covered by the trade agreement also tends to make the bloc more cohesive. In both cases — a closed bloc or deep integration — greater cohesion is obtained at the cost of increasing the costs of entry for nonmembers.

The hope that regional integration arrangements can pave the way for global free trade is unrealistic. As regional integration arrangements enlarge, they may be better off exerting market power against outsiders rather than following a globally cooperative path. Inter-bloc trade relations will ultimately depend on how effective special interest groups are at distorting bloc-wide trade policies that suit their interests. A multilateral trade system inhibits noncooperative behavior among trading blocs. The successful conclusion of the Uruguay Round extended and deepened the network of variables covered by multilateral rules. For developing countries, a working (even imperfect) multilateral trade system remains the best hope against excesses by those with market power.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to understand new regionalism in trade policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Kim, room R2-042, extension 33715 (36 pages).

1350. Economic Parameters of Deforestation

Joachim von Amsberg
(August 1994)

How do economic parameters such as the price of timber and the size of the decision-maker's discount rate influence land use patterns (particularly deforestation rates) over time?

Recent debate about how timber prices affect deforestation has focused mainly on how log export bans (imposed in many developing countries to protect domestic timber processing) affect deforestation.

One side argues that the lower domestic timber prices that result from banning log exports increase deforestation by making forestry less profitable than competing land uses, such as agriculture. The other argues that lower timber prices reduce profits from logging, so they slow down deforestation caused by logging.

Von Amsberg argues that the conflicting views result from simplistic analysis that ignores differences between types of forest. The two positions are reconciled by distinguishing between unmanaged forests (for example, biologically mature, previously unlogged primary forests) and managed forests (such as forest plantations cultivated for periodic harvest). This distinction allows the derivation of unambiguous comparative static results and is useful because many nontimber benefits from forests (such as biodiversity conservation) are associated mainly with unmanaged forests.

The distinction between managed and unmanaged forests leads to both unconventional and conventional results:

- All things being equal, a lower timber price results in larger areas of unmanaged forests and smaller areas of managed forests. That is, measures that reduce the producer price for timber (for example, import restrictions in timber-consuming countries and export restrictions in timber-producing countries) are suitable as a second-best policy to reduce the pressure on unmanaged forest frontiers. Most logging in tropical forests occurs in unmanaged forests, so the claim that trade restrictions (such as log export bans) increase deforestation is inconsistent with profit-maximizing land use.
- A fee on land used for logging is preferable to a tax on timber output, which is far more common but encourages logging waste.
- Technological interventions that increase the intensity of forestry or alternative land uses are an ambiguous instrument for the conservation of unmanaged forests.
- If demand elasticity for outputs is high, an intervention that increases the intensity of agriculture, logging, or other land uses increases incentives for conversion of unmanaged forests. The building of roads is particularly harmful to the conservation of unmanaged forests, as it increases incentives for logging and subsequent alternative land uses.
- Proper pricing of forest lands would increase land prices and lead to market-driven intensification accompanied by forest protection. Such pricing policies would be preferable to a technological intervention that increases land use intensity with ambiguous outcomes for forest protection.
- If unmanaged forest is converted to agriculture, the effect of lowering the decisionmaker's discount rate depends on the size of timber rents from logging unmanaged forests. If the standing timber has high commercial value, a lower discount rate would slow conversion of unmanaged forests. If the standing timber has no commercial value, logging is an investment for obtaining future benefits of alternative land use. A lower discount rate would stimulate this investment and increase the conversion of unmanaged forests. Also, if unmanaged forests are converted to managed forests, a lower discount rate can increase conversion since profits from managed forestry are higher with a lower discount rate.

This paper — a product of the Environment, Infrastructure, and Agriculture Division, Policy Research Department — is part of a larger effort in the department to analyze the sources and impacts of deforestation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Elizabeth Schaper, room N10-037, extension 33457 (59 pages).

1351. NAFTA's Implications for East Asian Exports

Carlos A. Primo Braga, Raed Safadi, and Alexander Yeats
(August 1994)

NAFTA-induced trade diversion losses could cost East Asian economies between \$380 million and \$700 million. Losses would be concentrated in a few sectors — such as textiles, clothing, and ferrous metals — where high U.S. trade barriers exist. But the trade losses East Asian economies might incur because of NAFTA are only 1/100th of the gains they will receive from successful implementation of the Uruguay Round results.

Several studies have quantified the influence of the North American Free Trade Agreement (NAFTA) and the earlier Canada–United States Free Trade Agreement on member countries. Less attention has been paid to their effects on nonmembers. Primo Braga, Safadi, and Yeats try to quantify NAFTA's third-party effects on East Asia using a partial equilibrium trade model and a gravity flow model. They identify and focus on East Asian export sectors that are especially "at risk" of trade diversion.

Their results suggest that the NAFTA-induced trade diversion losses could range from \$380 million to \$700 million. The larger figure represents less than 1 percent of East Asia's nonoil exports to the United States.

Their analysis also indicates that losses would be concentrated in a few sectors — such as textiles, clothing, and ferrous metals — where high U.S. trade barriers exist. A larger share of Hong Kong and Macau trade would be diverted than trade in other East Asian economies because textiles and clothing represent a larger share of their exports. Economies specializing in such products as machinery and equipment (Singapore) would have relatively little trade diverted.

East Asia's trade losses might be reduced by roughly half once the results of the Uruguay Round are implemented because that will lower the preference margins NAFTA members can extend to each other.

To put things in perspective: the trade losses East Asian economies might incur because of NAFTA are roughly 1 percent of the gains they will receive from successful implementation of the Uruguay Round results.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to understand new regionalism in trade policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Kim, room R2-042, extension 33715 (52 pages).

1352. Trade and Growth in Ecuador: A Partial Equilibrium View

Jesko Hentschel
(August 1994)

A deterioration of the terms of trade or a decline in world demand has a pronounced negative impact on Ecuador's trade balance and thus threatens growth if external financing cannot be obtained. This vulnerability stems in part from low substitution elasticities for imported factors of production. Policies that lead to a diversification of exports and higher price responsiveness for both imports and exports would reduce the vulnerability of Ecuador's economy to external shocks.

When the outbreak of the debt crisis in 1982 halted private international capital flows to most developing countries, it was not easy for Ecuador to cope with the changed international circumstances. Investments were largely in imported machinery as domestic capital goods production was in its infancy. Exports were concentrated in petroleum and several agricultural products and could not be counted on to increase foreign exchange in the short run. The trade balance was improved in the first half of the 1980s by reducing imports.

Hentschel examines the behavior of the Ecuadoran economy in a period of scarce foreign exchange.

He uses a small, econometrically specified "trade and growth" model of the Ecuadoran economy to illustrate the importance of trade elasticities. He estimates trade elasticities for Ecuador and integrates them into a small simulation model of Ecuador's supply side. He uses a nested constant-elasticity-of-substitution production function to derive factor input demands for two types of imported goods important in Ecuador: imported intermediate goods and imported machinery.

Elasticity estimates of imported factors of production are very low. They characterize both types of imports as complements to domestic factors.

Hentschel uses the econometrically specified model to examine the connection between imported factors of production and output capacity. He analyzes trade balance responses to a terms-of-trade shock, a devaluation, and an increase in world demand.

Low trade elasticities on the import side make the economy vulnerable to external shocks. The low elasticities necessitate large relative price shifts (through devaluations) to improve the trade balance if growth-reducing policies are to be avoided in times of scarce foreign exchange.

A deterioration in terms of trade has a pronounced negative impact on the trade balance. To the extent that trade elasticities remain low in the 1990s, events such as a commodity price decline, a renewed credit squeeze, or increased protectionism against Ecuadoran exports — like the recent European Union quotas on banana imports — can translate into renewed domestic supply disturbances.

Policies that lead to a diversification of exports and higher price responsiveness for both imports and exports would reduce the vulnerability of Ecuador's economy to external shocks.

This paper — a product of the Country Operations 1 Division, Latin America and the Caribbean, Country Department III — is part of a larger effort in the region to understand the linkages between trade and growth in Latin American countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dorothy Jenkins, room I5-057, extension 37890 (16 pages).

1353. Nontariff Measures and Developing Countries: Has the Uruguay Round Leveled the Playing Field?

Patrick Low and Alexander Yeats
(August 1994)

Trade liberalization measures agreed to in the Uruguay Round will dramatically reduce the incidence of nontariff measures limiting developing country exports. Safeguards and antidumping instruments are the likeliest source of protectionist measures to counter the new liberalization.

In the policy environment prevailing before implementation of the Uruguay Round results, exports from developing countries face significant nontariff measures in industrial countries.

Based on 1992 trade flows, the import coverage ratio of nontariff measures on this trade was more than 18 percent, compared with less than 11 percent for trade among industrial countries.

Trade liberalization measures agreed to in the Uruguay Round will dramatically reduce the incidence of nontariff measures on developing country exports: the coverage ratio will drop to less than 4 percent on nonoil exports.

This change has the dual effect of increasing export market opportunities for developing countries and of substantially reducing — if not eradicating — the relatively negative bias against developing country exports.

These impressive results from the Uruguay Round are attributable to "tariffication" in agriculture, the abolition of the Multi-Fibre Arrangement (MFA), and the elimination of voluntary export restraints (VERs) under the safeguards agreement. But all these aspects of liberalization will not happen instantaneously when the Uruguay Round results come into force. Agricultural tariffication will occur immediately, but the MFA will be phased out over ten years and VERs will be eliminated over four years.

Considering the extent of the liberalization presaged by these policy changes, Low and Yeats speculate about likely sources of pressure for measures to mitigate the effects of removing nontariff measures. They conclude that the greatest risks will probably come from safeguards and antidumping.

The new safeguards agreement permits the use of quantitative restrictions to stem the flow of injurious imports, and although the agreement tightens existing GATT rules in some respects, it loosens them in others.

The antidumping instrument has been used with increasing frequency by an increasing number of countries in the past two decades or more. The efforts of several governments in the Uruguay Round to impose additional controls on antidumping met with little success, and antidumping continues to offer considerable scope for imposing protectionist trade measures.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze and predict structural changes in trade and to quantify factors affecting developing countries' exports. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jean Jacobson, room R2-075, extension 33710 (25 pages).

1354. The Effects of Fiscal Consolidation in the OECD

Warwick J. McKibbin
(September 1994)

Is fiscal consolidation in the OECD during a period of low growth a recipe for global stagnation? Credible deficit reduction may well stimulate growth in the long run, despite the likelihood of lower GDP in the OECD. Lower international interest rates and bigger capital flows to developing countries will sustain the growth of GDP there, offsetting lower exports.

Despite the current recession in many parts of the OECD, fiscal consolidation is likely in many OECD economies in the 1990s. McKibbin asks: Is fiscal consolidation in the OECD in a period of low growth a recipe for global stagnation? In particular, what effects are likely in developing countries?

McKibbin starts with an overview of cuts in the U.S. fiscal deficit proposed by the Clinton administration and the extent to which European governments must cut fiscal deficits between now and 1997 to satisfy deficit targets in the Maastricht Treaty.

How changes in fiscal policy are transmitted within an economy and between that economy and the rest of the world depends on whether those changes lead to permanent or temporary changes in government saving; whether they are implemented through government spending or taxes; and whether the taxes fall on households or firms. The main channels of transmission are through changes in

- Agents' expectations about future taxes
- Interest rates
- Exchange rates
- Economic activity.

McKibbin uses the MSG2 multicountry models to quantify the ramifications of those changes.

He concludes, among other things, that fiscal contraction in the OECD will probably lead to slower growth over the next several years. But the current and likely paths of fiscal policy are such that deficit reduction programs may have a stimulating effect in the short run, as long as future fiscal contraction is credible. And fiscal deficit reduction will probably increase long-run output in the OECD through its effects on savings and investment.

Finally, growth in the developing countries (at least total growth) may not be impaired at all by fiscal consolidation in the OECD. The negative effects of fiscal contraction will occur through lower net exports of non-OECD economies. For developing countries with open capital markets, the initial reduction in demand through lower exports can be offset by the reduction in interest rates following an inflow of capital from the countries with contracting fiscal policy.

A significant decline in real global interest rates is likely to increase growth in developing countries that are debt-constrained, either directly (through private capital inflows) or indirectly (by relaxing the balance of payments constraint, allowing more resources to be channeled to domestic investment needs).

This paper is one in a series of background documents commissioned by the International Economics Department to support analyses and scenarios in *Global Economic Prospects 1994*. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jackie Queen, room S8-216, extension 33740 (30 pages).

1355. Export Incentives: The Impact of Recent Policy Changes

Sanjay Kathuria
(September 1994)

Despite improved export incentives, India's export profitability declined under the dual exchange rate regime (March 1992–February 1993). The situation reversed with the unification of the exchange rate in March 1993, and an export surge since then has been led by the sectors in which export profitability increased most.

India's trade policy regime has changed dramatically since July 1991. The objective of reform has been to improve export performance by improving export incentives and eliminating discretionary controls.

Using a simple model, Kathuria sets out to examine whether export incentives actually improved as a result of policy changes. One part of the two-part model compares export profitability across regimes. The other compares the gap between domestic and export profitability across regimes. The export base is divided into eight subsectors, and several simulation exercises are applied to each of them.

The main results:

- For most export sectors, export profitability was lower under the dual exchange rate regime (March 1992–February 1993) than in the period before July 1991.
- The gap between domestic and export profitability increased in the period of the dual exchange rate regime, meaning that domestic sales, already more attractive than export sales, became even more so.
- This adverse movement in export incentives was reversed with unification of the exchange rate in March 1993.

Overall, the regime has moved closer to its eventual goal of being neutral about import substitution and export promotion, which is reflected in a significant change in the attitude of India's corporate sector toward exports.

It is more than a coincidence that the export surge in fiscal 1993–94 was led mainly by the sectors that witnessed the greatest increase in export profitability.

This paper — a product of South Asia, Country Department II, Resident Mission in India — is part of a larger effort in the department to monitor economic developments in India and to assess their significance. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mona Haddad, room G3-113, extension 32160 (31 pages).

1356. Central Bank Independence: A Critical View from a Developing Country Perspective

Ignacio Mas
(September 1994)

Merely establishing an independent central bank may not bring about its professed benefits, especially in developing countries. Institutional arrangements should force discipline on fiscal policy directly rather than indirectly through monetary policy.

While the expansive literature on central bank independence contains some criticisms to the independent central bank quasi-paradigm, few critical analyses have been undertaken in the years between Friedman (1962) and Posen (1994). Mas extends Posen's analysis to developing countries, discussing more broadly and systematically the reasons why merely instituting an independent central bank may not bring about its professed benefits, especially in developing countries.

Mas argues that widely reported empirical tests that are purported to support the central bank independence proposition are plagued by potential problems of simultaneity, reverse causality, missing variables, and measurement errors. Yet one cannot make positive recommendations about institutional arrangements for central banks if causality relations are not well established, says Mas. Institutions are shaped by a country's record of — and preferences for — inflation and may have little influence on them.

Mas also argues that the purported benefits of an independent central bank may be eroded by conflicts between fiscal and monetary policy and by inherent problems of central bank institutional design (especially mechanisms for board appointments, public accountability, and budgetary control). If these institutional problems are not solved, problems of dynamic inconsistency traditionally associated with monetary policy are not eliminated, but merely transformed.

Mas suggests that the benefits of central bank independence are less likely obtained in less developed countries with shallow financial markets. Accordingly, central bank independence should be granted at a later stage in a country's financial sector development. If a less developed country seeks to establish a low-inflation path, it should concentrate on instituting financial policy reforms (such as liberalization and privatization) that bolster opposition to inflation rather than easily reversible and practically meaningless changes in legal and institutional structures. This will better ensure the sustainability — and hence, the credibility — of the government's anti-inflation stance.

Fiscal policy is often at the root of macroeconomic disturbances in developing countries. Fiscal policy is more deserving of special protection from politics because of fiscal dominance over monetary policy and its greater vulnerability to private interests. Mas suggests that the solution might be to make fiscal policy less susceptible to political pressures by creating an independent fiscal board.

Tying the fiscal hands of government may seem a far-fetched idea. But would it not make more sense to force discipline on fiscal policy directly rather than indirectly through monetary policy?

This paper was written while the author was a visiting professor at the University of Chicago, on leave of absence from the World Bank. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Terry Lucas, room G4-045, extension 30704 (42 pages).

1357. Does Participation Improve Project Performance? Establishing Causality with Subjective Data

Jonathan Isham, Deepa Narayan, and Lant Pritchett
(September 1994)

Participation by the intended beneficiaries caused improved project performance in the rural water supply projects studied.

Development practitioners are coming to a consensus that participation by the intended beneficiaries improves project performance. But is there convincing evidence that this is true? Skeptics have three objections:

- "Participation" is not objective: project rankings are subjective.
- This subjectivity leads to "halo effects."
- Better project performance may have increased beneficiary participation rather than the other way around; a statistical association is not proof of cause and effect.

Isham, Narayan, and Pritchett show methodologically how to answer each of these objections. Subjectivity does not preclude reliable cardinal measurement. Halo effects do not appear to induce a strong upward bias in estimating the effect of participation. Finally, instrumental variables estimation can help establish a structural cause and effect relationship between participation and project performance — at least in the rural water supply projects they studied.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994* on infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Michael Geller, room T7-079, extension 31393 (38 pages).

1358. Patterns of Behavior in Biodiversity Preservation

Andrew Metrick and Martin L. Weitzman
(September 1994)

In the United States, funds for the protection of biodiversity are spent disproportionately on such "charismatic megafauna" as bald eagles and grizzly bears, which are less endangered than many species with less charm. Big animals get funding; other fauna, and all flora, get short shrift.

Conservation budgets are limited, so it is right to ask of biodiversity programs, What should be preserved? How much should be preserved? Where?

Recent papers on optimal preservation policy have tried to integrate three considerations: the relative uniqueness of different species or habitats, the degree of risk to their continued survival, and the opportunity cost of the resources needed to enhance their prospects for survival.

It is natural to ask, How are we doing? Have biodiversity conservation resources been optimally allocated? What determines government decisions about the preservation of endangered species? Metrick and Weitzman submit the first report card, an empirical analysis of U.S. species preservation policy, the best-documented country experience currently available.

Metrick and Weitzman discuss the most common normative justifications for biodiversity preservation and identify measurable proxies for a subset of those justifications. Proxies include "scientific" species characteristics, such as "degree of endangerment" and "taxonomic uniqueness," as well as "visceral" characteristics, such as physical size and to what extent a species is considered a "higher form of life." They find that both kinds of characteristics, but especially "visceral" characteristics, influence government decisions on whether to protect a species under the Endangered Species Act.

Metrick and Weitzman find that "visceral" characteristics — especially physical size and taxonomic class — are also important in explaining how much is spent on endangered species. Perhaps more surprising is their finding that more is spent on animals with lower risk of extinction than on animals with higher risk of extinction.

Metrick and Weitzman's results are sobering. Many millions have been spent on species preservation, but neither uniqueness nor risk has weighed heavily in resource allocation. Instead there has been a heavy bias toward "charismatic megafauna" — large, well-known birds and mammals ("higher forms of life," in the human value system). Other classes of fauna — including, say, eels or wild toads — and all flora, have gotten extremely short shrift.

Prominent examples of species with high charisma, high attention, and relatively low endangerment are the bald eagle, the Florida scrub jay, and the grizzly bear. Other species may have less charisma but could have more scientific value or species risk.

This paper — a product of the Environment, Infrastructure, and Agriculture Division, Policy Research Department —

is part of a larger effort in the division to see what lessons can be learned about environmental protection from the U.S. experience. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anna Marañon, room N10-033, extension 39074 (28 pages).

1359. When Method Matters: Toward a Resolution of the Debate about Bangladesh's Poverty Measures

Martin Ravallion and Binayak Sen
(September 1994)

Poverty measurement is often controversial. A case study for Bangladesh examines how much methodological choices matter in poverty monitoring.

Measurement problems have confounded recent attempts to assess Bangladesh's progress in reducing poverty. The issues at stake, though poorly understood, are common in poverty measurement.

Ravallion and Sen review the issues, recommend an operational approach to resolving them with available data, and present new estimates of various poverty measures on a consistent basis for 1983–92.

They then examine proximate causes of the changes in Bangladesh's poverty measures and possible implications for future assessments of the country's progress in reducing poverty under alternative growth paths.

Ravallion and Sen argue that poverty measurement requires both normative value judgments and assumptions about behavior to interpret available — invariably imperfect — data. Of interest for policymakers is how much bearing the analyst's choices have on key conclusions.

They use the case study of Bangladesh to illustrate that those choices sometimes — but not always — affect qualitative conclusions about progress in reducing poverty and about the sectoral structure of poverty.

There appear to be considerable discrepancies among recent estimates of poverty measures for Bangladesh — even when the same survey data and a similar specification of food-energy requirements are used. Ravallion and Sen contend that all recent estimates are questionable from one viewpoint or another, although some

They propose a new series that, they hope, preserves the best features of previous work and eliminates the others. They believe that their estimates are more consistent over time and space than some others in the literature — consistent in the sense that two people with the same command over basic consumption needs will be treated the same way by the poverty measures.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to improve data and methods for monitoring poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-057, extension 33902 (47 pages).

1360. Are Portfolio Flows to Emerging Markets Complementary or Competitive?

Sudarshan Gooptu
(September 1994)

Developing countries must compete with each other for the pool of private voluntary capital allocated by portfolio managers to emerging market securities. To compete for such investment, developing country policymakers must send the right signals about domestic economic and institutional reforms to international capital markets.

Increasing portfolio investment flows to emerging markets in the past few years have led to fears of a sudden reversal of these flows and possible portfolio switching (from one emerging market to another) among foreign investors.

To assess the sustainability of such portfolio flows, Gooptu examines econometrically whether portfolio investment *flows* to one region in the developing world are significantly related to those going to another region.

This question has important policy implications for policymakers in developing countries who, in considering domestic policy reforms to attract foreign portfolio investment, want to ascertain whether financial flows from abroad are coming from an increasing pool of investible resources in the industrial world or whether they represent the same funds (for example, "hot money") chasing different high-yield

In other words, does a sort of "adding-up" constraint apply to these flows — do they function as substitutes — or not? Or could these flows be complementary?

Gooptu analyzes new quarterly World Bank data on gross portfolio investment flows for eight emerging markets (India, Indonesia, the Republic of Korea, and Thailand in Asia, and Argentina, Brazil, Chile, and Mexico in Latin America) for the period from the first quarter of 1989 to the second quarter of 1993.

Results indicate an inverse relationship between total portfolio flows to emerging Asian stock markets and those to Latin America. This negative relationship holds for both *debt portfolio flows* (through bonds, certificates of deposit, and commercial paper) and *equity portfolio flows* (through closed-end country funds, depository receipts, and direct equity purchases by foreigners in the emerging markets).

There has been a surge of portfolio flows to developing countries in the 1990s, but developing countries must compete for those flows.

In the long term, portfolio flows to well-performing countries will be sustained because of improved creditworthiness and proportionately greater investor interest (however marginal, on the whole). Increasing the pace of reform in an emerging stock market is essential for sustaining portfolio flows.

This paper — a product of the International Finance Division, International Economics Department — is part of a larger effort in the department to analyze the behavior of private capital flows to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 31047 (32 pages).

1361. External Shocks and Performance Responses during Systemic Transition: The Case of Ukraine

F. Desmond McCarthy, Chandrashekar Pant, Kangbin Zheng, and Giovanni Zanalda
(September 1994)

Ukraine has been suffering from severe external shocks that complicate its transition to a market economy and require a judicious choice of policy measures.

Ukraine encountered many economic

dence. Most serious among external shocks were the collapse of trade with the former Soviet Union and sharp price increases for energy imports. External shocks resulted in an income loss in the current accounts equivalent to about 14 percent of GDP a year in 1992 and 1993.

Ukraine did not adopt an appropriate strategy for dealing with the impact of these shocks. Its main policy response has been to continue borrowing, increase arrears, postpone adjustments, and restore administrative interventions. Not only has this policy exacerbated the economic crisis, it has led to massive capital flight and rapid expansion of the underground economy.

With the limited information available, McCarthy, Pant, Zheng, and Zanalda try to identify the major sources of external shocks and to estimate their impact on the current account. They also evaluate Ukraine's policy responses.

Based on examination of the experience of other countries in addressing adverse shocks, the authors recommend the following policies:

- Full commitment to systemic reform and macroeconomic stabilization.
- Privatization, price liberalization, development of a competitive market system, and reform of the legal system.

For the particular situation of Ukraine, they emphasize the importance of:

- Growth-oriented structural adjustment that reflects Ukraine's comparative advantages, including the development of nontraditional industries with high value-added and low energy intensity.
- Greater economic (especially energy) efficiency.
- Integration into world systems of trade and finance.
- Prudent borrowing and debt management strategies, as well as policies to encourage private foreign direct investment and to make more efficient use of foreign debt.

This paper is a joint product of Country Operations Division 2, Europe and Central Asia, Country Department IV and the Office of the Vice President, Development Economics. The study was funded by the Bank's Research Support Budget under the research project "Economic Shocks and the Global Environment" (RPO 677-75). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mila Divino, room S9-049, extension

1362. Regulation, Institutions, and Commitment: The Jamaican Telecommunications Sector

Pablo T. Spiller and Cezley I. Sampson
(October 1994)

The apparently inefficient pricing schemes and regulatory structure in Jamaican telecommunications are a second-best alternative that reflects a pragmatic response to the commitment problem Jamaica's government institutions have with public utilities.

Jamaica's telecommunications sector today is much more dynamic than it was before and provides much better service. There is widespread skepticism about the current regulatory framework, which is criticized for encouraging a tight telecommunications monopoly, little administrative discretion, and continuous price adjustments to satisfy what many see as a high rate of return requirement. But Spiller and Sampson suggest that the regulatory framework is a "second-best" alternative, a pragmatic response to Jamaica's institutional realities.

Spiller and Sampson analyze why the reforms of the late 1980s took the form they did, and whether they could have been better. They find that the changing nature of regulatory institutions, ownership arrangements, and sector performance in the past 50 years is traceable to intense contracting problems between firms or interest groups and the government. Attempts to resolve these contracting problems have continuously constrained the government's (and firms') ability to implement efficient pricing schemes.

In the abstract, Jamaica's regulatory structure looks inefficient. In the context of Jamaica's political system, politics, judiciary, bureaucracy, and interest groups, the regulatory framework developed in the late 1980s emerges as a fairly pragmatic, welfare-improving set of policies.

Perhaps it could have been better, but its current design reflects basic commitment problems Jamaica's government institutions have with public utilities, conclude Spiller and Sampson.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger regulatory research effort in the department. The study was funded by the the research project "Regulation, Institutions, and Economic Efficiency" (RPO 676-94). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 38526 (78 pages).

1363. Brazil's Sugarcane Sector: A Case of Lost Opportunity

Brent Borrell, José R. Bianco,
and Malcolm D. Bale
(October 1994)

The result of inappropriate policy interventions in Brazil's sugarcane and ethanol industry: lost opportunities, reduced industry profitability, and billions of dollars annually in forgone income to the state.

The Brazilian sugar and ethanol story goes like this: Direct market intervention overrides market forces. Markets undergo dramatic change. Intervention establishes vested interests. Rent-seeking blocks adjustment to market change. Economic objectives become blurred behind political objectives. Opportunities go begging. Industry profitability suffers. And national income is forgone.

Borrell, Bianco, and Bale use a simple economic model of the Brazilian sugarcane sector and policy interventions to measure the costs of existing policies and to develop better policies.

Brazil is an efficient producer of sugar, but policy intervention has caused:

- Underproduction of sugarcane.
- The wrong mix of sugar and ethanol from cane (too much ethanol, not enough sugar).
- Missed opportunities to market ethanol in high-value uses (as an octane enhancer and clean fuel).
- Missed opportunities to make the world sugar market more competitive.

Adopting more market-based policies could be worth billions of additional dollars annually to Brazil.

This paper — a product of the Latin America and the Caribbean, Country Department I, Natural Resources and Rural Poverty Division — is part of a larger effort in the region to analyze economic and sectoral policies in Brazil. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Malcolm Bale, room

1364. Why Do Some Economies Adjust More Successfully Than Others? Lessons from Seven African Countries

Ishrat Husain
(October 1994)

A strong, committed, and visionary leadership that places adjustment in the context of the country's long-term development can bond and cement diverse and divergent viewpoints and nurture a shared vision for the future.

The sustained application of adjustment policies is explicable in terms of two variables — domestic ownership and capacity. These findings carry important implications for the future policies of African governments and their external partners.

There is an urgent need for the African governments to go beyond their limited and small groups of technocratic advisers and civil servants to consult, educate, and inform the representatives of the civil society and opinion-makers in the design and implementation of adjustment policies and institutional restructuring. A strong, committed, and visionary leadership that places these policy reforms in the context of the country's long-term development can bond and cement diverse and divergent viewpoints and nurture a shared vision for the future.

For the international financial institutions and external donors who are supporting African governments, the narrow, short-term, and conditionality-driven enforcement and compliance of agreements needs to be replaced by a medium- to long-term framework of macro, sectoral policy, and investment and institutional changes developed and owned by government — keeping short-term capacity as given constraints, but taking measures to develop this capacity within the long-term framework. This framework can then be translated into time-bound, specific action programs on various agreed-on changes between the donors and the African governments.

Both the African governments and their external partners have to rethink the measures that will build, save, use, and enhance the capacity of African governments, private sectors, nongovernmental organizations, professional groups, universities, and research institutes. The adversarial relationship between the government and the private sector will have to be transformed into a symbiotic and constructive partnership aimed at achieving the long-term developmental goals. The effectiveness of the present practices of delivering the technical assistance by external donors has been sufficiently questioned, and a new way of delivering this assistance employing capacity building and utilization as the overreaching objective needs to be developed. The transferability of institutions or policies from one setting to another has always proved difficult, but adapting successful practices that have worked elsewhere should be encouraged.

This paper — a product of the Office of the Chief Economist, Africa Regional Office — is based on a recent study on adjustment in Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joy Schwartz, room J5-255, extension 32250 (44 pages).

1365. The Macroeconomics of Adjustment in Sub-Saharan African Countries: Results and Lessons

Ishrat Husain
(October 1994)

Adjustment is necessary even if it is bound to work slowly. But for it to work at all depends on the strong commitment by leaders of Sub-Saharan countries to sustain reform policies in the face of adverse and harsh external circumstances and domestic political pressures.

Despite the satisfactory performance of several intensely adjusting Sub-Saharan African countries — and successful results in agriculture and food production — the overall results of adjustment achieved in Africa have so far been modest. Adjustment has not yet succeeded in raising the rate of growth enough to make major inroads in reducing poverty.

Sub-Saharan Africa's economic recovery is still fragile. Currency depreciation and inflationary pressures have not yet been fully subdued in several countries because of persistence of underlying expansionary fiscal and monetary policies. Many Sub-Saharan countries still rely exclusively on external grants and concessional financing to close their fiscal gaps. Per capita consumption remains stagnant, and private investment has not yet revived. Unemployment rates are still high, particularly in urban areas, and poverty is on the rise. When there is civil strife, adjustment, of course, has not worked.

There is a general consensus that consistent and unfettered implementation of adjustment policies and attainment of macroeconomic stability do improve the outlook for growth in Africa. But the record of implementation is mixed and uneven. Adjustment is necessary even if it is bound to work slowly. But for it to work at all depends on the strong commitment by leaders of these countries to sustain reform policies in the face of adverse and harsh external circumstances and domestic political pressures.

What is less clear, and thus invokes controversy, is the speed, timing, and sequencing of adjustment programs. As each reform has a different impact on the various segments of the population — creating winners and losers — mediating among these conflicting claims is highly political. There are no technocratic solutions or quick fixes to provide satisfactory solutions. No amount of external assistance can help in this process. Consensus-building, open communication, consultations, and debate — and reaching compromises — will bring about the durable results. But in practice, this path has proved difficult.

It is equally clear that adjustment policies, even when they are put in place after reaching internal consensus, will not lift African countries out of poverty. The agenda of policy reforms should be considered as part of the broader long-term development strategy of each country. This strategy should aim not only at changes in policies, but also at improving investment in human resources and physical infrastructure, accelerating opportunities for private sector development, enhancing the quality of governance, strengthening institutional capacity, and — most important — maintaining national solidarity and social cohesion.

This paper — a product of the Office of the Chief Economist, Africa Regional Office — is based on a recent study on adjustment in Africa. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joy Schwartz, room J5-255, extension 32250 (22 pages).

1366. Distributive Concerns When Replacing a Pay-As-You-Go System with a Fully Funded System

Salvador Valdés-Prieto
(October 1994)

How is income distribution affected if you replace a progressive social security program that redistributes income toward the poor (but is financed by a pay-as-you-go method) with a neutral social security program that is fully funded?

Valdés-Prieto uses a simulation model to quantify the impact on income distribution of having a neutral social security program that is fully funded replace a progressive social security program that redistributes income toward the poor but is financed by a pay-as-you-go method.

He finds that if the original pay-as-you-go system is large enough to yield an income replacement rate of at least 40 percent for the middle class and 200 percent for the poor, then the proposed change helps the poor in the long run, so long as public debt does not increase by more than 40 percent of GDP during the transition.

Such a reform allows an increase in the capital stock per worker, so in the long run the poor benefit more through higher real wages that they lose because progressive redistribution has ended. In the short run, however, a compensatory program is needed because the poor lose their subsidy before receiving the long-term benefit.

In most cases, the 40 percent of GDP available from the increase in public debt is enough to finance a transfer program that compensates the poor in the "short" run (the first 50 years).

Valdés-Prieto concludes that concern about the welfare of the poor is unwarranted, in both the short and long runs, if the compensatory program is implemented.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand reforms of old-age security systems. The study was funded by the Bank's Research Support Budget under the research project "Income Security for Old Age" (RPO 677-45). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (36 pages).

1367. The Economics of Cash Shortage

Patrick Conway
(October 1994)

Cash shortages in the economies of the former Soviet Union are manifestations of financial disintermediation: the banking sector is unable to attract enough voluntary deposits. Printing more money will only stimulate higher inflation. Raising nominal interest rates is a more appropriate policy response.

Many economies of the former Soviet Union have experienced cash shortages: people with demand and savings deposits in the banking system are unable to convert them into currency. Usually this is attributed to the common use of the ruble.

Conway argues otherwise. According to him:

- Cash shortages are manifestations of financial disintermediation: the banking sector is unable to attract enough voluntary deposits.
- Cash shortages allow the government to hold inflationary pressures in check.
- Solutions to the cash shortage problems that rely on printing new currency will leading to accelerating inflation. More appropriate solutions (increasing the nominal interest rate, for example) involve reversing the economic incentives to financial disintermediation.

Excess demands for cash reflect conditions in financial markets. The phenomenon of cash shortage is related to the concept of shallow formal financial markets. This shallowness is recent in the former Soviet Union. The burst of inflation in early 1992 removed the "ruble overhang" and greatly reduced all indicators of financial depth. Continuing shallowness is a direct consequence of financial disintermediation because of negative real interest rates.

This paper — a product of Country Operations Division 2, Europe and Central Asia, Country Department IV — is part of a larger effort in the department to study financial sector and macroeconomic policies in transition economies. The study was funded by the Bank's Research Support Budget under the research project "Ruble Shortage Phenomenon in Members of the Ruble Currency Zone." Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lenora Suki, room H2-096, extension 33974 (17 pages).

1368. Sustained Inflation in Response to Price Liberalization

Patrick Conway
(October 1994)

Sustained inflation is a predictable response to price liberalization in the countries of the former Soviet Union.

Conway demonstrates that sustained inflation is a predictable response to price liberalization in the countries of the former Soviet Union.

He models the phenomenon in a dynamic macroeconomic framework, and demonstrates the immediate price jump followed by sustained inflation that has characterized the transitional economies of the former Soviet Union.

He supports the theoretical derivation with a simulation exercise that demonstrates the scope of sustained inflation for specific parameters.

This paper — a product of the Country Operations Division 2, Europe and Central Asia, Country Department IV — is part of a larger effort in the region to study financial sector and macroeconomic policies in transition economies. The study was funded by the Bank's Research Support Budget under the research project "Ruble Shortage Phenomenon in Members of the Ruble Currency Zone" (RPO 678-08). Copies of this paper are available free from the World Bank. 1818 H Street NW, Washington, DC 20433. Please contact Lenora Suki, room H2-096, extension 33974 (25 pages).

1369. Economic Policy Reform, Government Debt Guarantees, and Financial Bailouts

Philip L. Brock
(October 1994)

A financial bailout may be a lagging indicator of a successful policy to offer financial guarantees to potential losers from reform —to gain their political support.

Economic policy reform that creates opportunities for new productive activities often shifts wealth from one set of agents toward another, creating reason for political pressure against the reform.

Brock explores how government financial guarantees secure the political support of the reform's "losers."

Government guarantees have two effects:

- They will probably lead to a bailout of some firms' obligations to debtholders. This bailout must be financed by taxes on the cash flows from old and new projects, and tax collection involves a resource cost.
- The existence of the guarantees distorts entrepreneurs' investment incentives by creating an incentive to invest in overly risky projects and not to invest in safe new projects.

Brock demonstrates that government guarantees on existing debt, combined with the use of junior secured debt to finance new projects, would mitigate the problem of underinvestment in safe projects and overinvestment in risky projects.

The potentially positive role of government financial guarantees after economic reform does *not* imply that prudential banking standards fail to apply during a period of economic reform. If anything, prudential standards are *more* important during such a period. But it does imply that a financial bailout may be a lagging indicator of a successful policy to offer financial guarantees to potential losers, so they will support reform.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — was prepared for the seminar on "The Financial System: An International Perspective," held in San José, Costa Rica, September 1993. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-059, extension 37644 (28 pages).

1370. Is East Asia Less Open than North America and the European Economic Community? No

Sumana Dhar and Arvind Panagariya
(October 1994)

There is more bias toward intra-regional trade in North America and the founding members of the European Union (EEC) than in East Asia. East Asian markets are not closed to trade with outside countries.

To shed light on regional integration schemes in North America and Europe (and on the alleged trading bloc in East Asia), Dhar and Panagariya explore the nature of bilateral trade relationships.

Using the gravity model, they conduct an econometric analysis of trade flows between major trading countries. They estimate bilateral trade flow equations using a data set for 45 countries over 12 years and then use those equations to study the contribution of trading blocs to intra-regional trade.

Past investigators have estimated the gravity equation using data for total trade, pooling data across countries. Dhar and Panagariya estimate separate equations for the exports and imports of 22 countries (nine in East Asia, six in Europe, three in North America, two in South America, and one in Oceania).

Using 27 countries outside of North America, East Asia, and the founding members of the European Union (EEC) as the control countries, Dhar and Panagariya test for each region's openness to trade with outside countries.

They conclude that:

- Results based on individual-country equations differ greatly from those obtained from pooled, cross-country equations. In some cases, this difference is qualitative. Not surprisingly, in virtually all cases the cross-country equation masks large differences among countries. The coefficient associated with distance, for example, varies between –4.4 and –0.4 across the authors' equations. In almost every case the coefficient is statistically significant at a confidence level of 99 percent or more.
- If there is an intra-regional bias in trade, it is more in North America and among the founding members of the European Union than in East Asia. Canada, the United States, and all countries of the EEC show an intra-regional bias in both exports and imports. In East Asia, on the other hand, exports in six out of nine countries have a statistically significant bias *away from* intra-regional markets.
- There is little support for the hypothesis that East Asian markets are closed to trade with outside countries.
- Contrary to conventional wisdom, controlling for other variables, many countries export less to North America than to countries outside the three regions. Similarly, countries outside the EEC export more to the EEC than to countries in the control group.

This paper — a product of the International Trade Division, International Economics Department — is part of a study funded by the Bank's Research Support Budget under the research project "Understanding Bilateral Flows: An Application to East Asia" (RPO 677-86). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-054, extension 37959 (39 pages).

1371. The Evolution of Trade Treaties and Trade Creation: Lessons for Latin America

Sarath Rajapatirana
(October 1994)

Latin American countries can avoid trade diversion in their regional trade agreements through GATT-plus trade liberalization.

Rajapatirana examines the main distinctions between trade liberalization under the General Agreement on Tariffs and Trade (GATT) and under regional trading agreements. Under the GATT, trade liberalization is based on the most-favored-nation principle. Under regional trade agreements, it is based on preferential trade.

Establishing regional trade agreements does not necessarily lead to greater regional integration. The European Economic Community has been an exception, and with greater integration, regional trade has grown steadily. The Association of South East Asian Nations (ASEAN) has been a weak association, but trade among ASEAN members has increased rapidly because member countries have undertaken multilateral trade liberalization.

The efforts of Latin American countries to create regional trade associations in the 1960s, based on protectionist policies, reduced trade not only regionally, but with the rest of the world. In contrast, the Latin American regional trading agreements of the 1980s and 1990s have liberalized trade among the groups.

Proper regional trading agreements must conform to Article XXIV of the GATT, but nearly all the countries that have created regional integration schemes have not followed it. These regional trading agreements have not increased protection, but neither has there been across-the-board trade liberalization.

Regional trading agreements carry with them the danger of trade diversion (when imports that used to come from third countries at lower prices become costlier because of preferential access granted to a higher-cost regional source).

How can Latin American countries reduce trade diversion in their regional trading agreements?

- Keep protection low in the first place.
- Have open regional trade associations (so that it is easy for new partners to join).
- Continue liberalizing trade with the rest of the world, following the most-favored-nation principle.
- Establish common markets rather than free trade areas (because rules of origin create new barriers, including bureaucracies).
- Coordinate regulatory and competition policies. Eliminate laws that limit competition and adopt common external tariffs.
- Improve roads, ports, and means of communications.

This paper — a product of the Advisory Group, Latin America and the Caribbean Technical Department — is part of a larger effort to disseminate lessons about policy and institutional reform that are relevant to the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joy Troncoso, room I8-314, extension 37826 (31 pages).

1372. Administrative Charges in Pensions in Chile, Malaysia, Zambia, and the United States

Salvador Valdés-Prieto
(October 1994)

A framework for comparing international differences in costs, charges, and quality of service in mandatory and private pension systems, and in state-run and privately managed systems.

Valdés-Prieto offers a framework for an international comparison of charges in mandatory and private pension systems, and in state-run and privately managed systems. Such comparisons make it possible to determine which combinations of quality and cost make the most sense in pension services.

He finds that:

- Charges in the private annuity industry are much higher than other components of the pension package, and much higher than publicly provided annuities in the United States.
- Comparing the collection function in different countries is difficult. In Chile, Malaysia, and Zambia, the pension system must collect contributions on its own. In the United States, the Social Security Administration piggybacks of the collection of federal income tax. A mandatory pension system could be used as a base for organizing other services, such as mandatory health care contributions and widely based income taxes, at a low marginal cost.
- In the United States, there is no reliable information on the cost of the active-life portion of social security.
- Chilean AFPs (Administradoras de Fondos de Pensiones) charge slightly more for the active life portion of pension services than the international average for similar services, but appear to offer better quality service.
- Marketing costs for Chilean AFPs — which arise because of workers' freedom to select providers — were just 26 percent of lifetime charges in 1991.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to analyze pension systems and reforms. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (56 pages).

1373. Firm Behavior and the Labor Market in the Hungarian Transition

Simon Commander, Janos Kollo, and Cecilia Ugaz
(October 1994)

Employment losses in Hungary have been large since the start of the transition. Yet there is evidence of continuing wage rigidity and a weak, if not absent, playback of unemployment to wages.

Commander, Kollo, and Ugaz describe the main changes in the Hungarian labor market since 1989. They focus especially on changes in behavior in state and privatized firms, since the shedding and restructuring of labor are at the heart of the transition. They describe five types of firms:

- State firms (often in bad shape and/or natural monopolies).
- New or privatized firms with significant foreign direct investment.
- Firms privatized by insiders.
- Firms privatized by outside (but domestic) investors.
- New small-scale ("de novo") private firms.

The state and de novo firms are increasingly outside the tax system — the state firms by de facto tax exemptions, the de novo firms through tax evasion. As the de novo sector grows, the effective tax yield will tend to fall, shifting the tax burden to the other three types of firms.

Subsidizing the growth of the private sector may have been desirable initially, but it is dynamically undesirable. It is important to change the distribution of the tax burden, while setting tax rates that enhance the growth of labor. The type of growth seen in the last four years is probably not sustainable.

With tax evasion high, average payroll taxes in the taxable sector have until recently risen sharply. Social insurance spending and other labor taxes represented about 34 percent of hourly compensation costs in 1992 — significantly more proportionately than in OECD and most transition economies. And high contribution rates together with apparent real wage rigidity have depressed the rate of job creation in the taxed sectors.

Wage levels are lower than in neighboring countries but higher than in other transition economies. Despite adverse shocks to output and employment, consumption wages have risen slightly and unit labor costs have clearly increased.

Commander, Kollo, and Ugaz emphasize the continuing loss of employment and its changing distribution in terms of ownership, sector, and taxation — as well as associated changes in unemployment that have resulted from the asymmetric paths of the state and private sectors.

This paper — a product of the National Economic Management Division, Economic Development Institute — is part of a larger effort to analyze the behavior of labor markets in the transition. The study was funded by the Bank's Research Support Budget under the research project "Labor Markets in Transitional Socialist Economies" (RPO 677-30). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Valerie Reid, room M3-047, extension 35195 (43 pages).

1374. Infrastructure Finance: Issues, Institutions, and Policies

Anand Chandavarkar
(November 1994)

The distinctive features of formal and informal financing of infrastructure and the principal issues policymakers must address in dealing with infrastructure finance.

Chandavarkar analyzes the distinctive features of formal and informal financing of infrastructure and the principal issues policymakers must address in dealing with infrastructure finance: its adequacy in competitive financial systems, its budgetary vulnerability, the rationale for foreign finance, the role of user charges and taxes, the pros and cons of earmarking taxes, the institutional framework for infrastructure finance, the role of municipal finance, different approaches to the private financing of infrastructure (such as franchises, leases, management contracts, and consumer cooperatives), the critical role of contractor finance, and informal financing of infrastructure.

Chandavarkar concludes, among other things, that:

• Not only the amount of funds but the regularity of their flow is central to maintaining infrastructure. But infrastructure must compete on a level playing field with other sectors. Any essential (but not open-ended) subsidies for maintaining universal minimum standards of service are best carried on the government budget, subject to periodic review.

• Institutional reform is needed to rationalize the division of resources and responsibilities among all layers of government and to provide mechanisms for insulating infrastructure finance from budgetary and other pressures. Such mechanisms include earmarking, privatization, and objective criteria for sharing value-added tax and other national tax revenue.

• Most developing countries do not have a national infrastructure agency to fund and coordinate technical assistance for infrastructure projects. Chandavarkar makes a case for an apex financial entity in charge of municipal financial intermediaries for infrastructure, pointing to the instructive experience of intermediaries in Colombia and Jordan. One responsibility of such an agency would be to determine the necessary import content (for equipment, technical, and managerial expertise) of infrastructure finance, to prevent overborrowing.

• Privatization of infrastructure should be viewed as implicit earmarking, but official regulation of public utility prices should allow private utilities to generate retained earnings (to encourage self-financing) and should allow adjustments for inflation and exchange rate fluctuations.

• Infrastructure policy should allow for cost recovery through user charges as well as for tax revenues, especially through municipal taxes, since even the viability of loan finance depends on an efficient tax effort.

• While infrastructure finance is important, it is not always the decisive constraint, judging from the operating losses of even adequately funded infrastructure projects.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994* on infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Michael Geller, room T7-079, extension 31393 (38 pages).

1375. Policy Lessons from a Simple Open-Economy Model

Shantayanan Devarajan, Delfin S. Go, Jeffrey D. Lewis, Sherman Robinson, and Pekka Sinko
(November 1994)

This paper describes how to specify, solve, and draw policy lessons from small, two-sector, general equilibrium models of open economies.

Devarajan, Go, Lewis, Robinson, and Sinko show how two-sector models can be used to derive policy lessons about adjustment in developing economies.

In the past two decades, changes in the external environment and in economic policies have been the key factors in the performance of developing economies. By and large the shocks have involved the external sector: terms-of-trade shocks or cutbacks in foreign capital. The policy responses most commonly proposed have targeted the external sector: depreciating the real exchange rate or reducing distortionary taxes to make the economy more competitive. The authors provide a starting point for analyzing the relation between external shocks and policy responses.

Starting from a small, one-country, two-sector, three-good (1-2-3) model, the authors outline how the effects of a foreign capital inflow and terms-of-trade shock can be analyzed. They derive the assumptions underlying the conventional policy recommendation of real exchange rate depreciation in response to adverse shocks. The implications of such trade and fiscal policy instruments as export subsidies, import tariffs, and domestic indirect taxes can also be studied in this framework.

The authors show that the standard advice to depreciate the real exchange rate in the wake of an adverse terms-of-trade shock rests on the condition that the income effect of the external shock dominates its substitution effect. But, depending on the characteristics of the economy (for example, the trade elasticities), policy results may run counter to received wisdom. For example, when the substitution effect of an adverse external shock dominates, real depreciation is inappropriate. An infusion of foreign capital does not necessarily benefit the nontradable sector, as the results of "Dutch disease" models suggest (for example, in the extreme case of nearly infinite substitution elasticity between imports and domestic goods). When import tariffs are significant sources of public revenue, potential revenue losses from tariff cuts must be offset by other revenue sources to maintain the external current account balance. The paper shows a simple way to calculate the necessary tax adjustment.

A major advantage of small models is their simplicity. The example in this paper can be solved analytically — either graphically or algebraically. It also can be solved numerically, using such widely available PC-based spreadsheet programs as Excel.* The numerical implementation involves only modest data requirements. The data that governments normally release on national income, fiscal, and balance of payments accounts are sufficient.

*A companion Excel-based model is available. Bank staff can copy the spreadsheet file "123.xls" from the Policy Research Department's network drive, prd@prdsvr01@worldbank, under the directory "models." The file can also be requested from the internet electronic mail address prdpe@worldbank.org. The file will be available on the Bank's Gopher in the future.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to develop tools for analyzing tax policy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (38 pages).

1376. How Trade, Aid, and Remittances Affect International Migration

Maurice Schiff
(November 1994)

Trade liberalization in either the sending or the receiving country is likely to increase migration in the long run. In the short run, the effect is ambiguous.

Policymakers typically assume that trade liberalization and foreign aid ultimately reduce international migration — that is, that trade and aid are substitutes for migration. In the Heckscher-Ohlin framework, too, trade liberalization (by reducing international price differentials between factors) leads to a decline in international migration.

Schiff's model shows that trade liberalization in either the sending or the receiving country is likely to increase migration in the long run. In the short run, the effect is ambiguous.

Schiff maintains the Heckscher-Ohlin framework but adds two features found in developing economies of the south and east that affect migration: migration costs and imperfect capital markets.

He assumes that migration costs may be a constraint on migration, especially when combined with imperfect capital markets. Poor migrants without collateral may have trouble getting loans at reasonable rates, especially if they plan to emigrate. And for most migrants, the cost of migration is not negligible. They must pay for transportation and for living expenses until they find a job in the new country, and illegal immigrants must make payments to intermediaries for services and information (to reduce the chance of being caught).

Trade liberalization in a labor-abundant economy, foreign aid, and remittances will increase income from labor and improve workers' ability to cover the costs of migration. As a result, migration will increase. (Following trade liberalization, female migrants have increasingly been employed in the textile, garment, light electronics, and agricultural processing industries in Asia, Latin America, and North Africa, for example, and their higher income has helped finance the migration of men.)

What about the combined effect of trade liberalization and foreign aid, a frequent combination associated with bilateral and multilateral aid? The lower the labor income and the higher the costs of migration, the more likely trade liberalization, foreign aid, and remittances are to complement each other and lead to increased migration. (This is particularly applicable for south-north and east-west migration, as incomes in the sending countries are often low relative to migration costs.)

If trade liberalization in either country is too weak to positively affect migration, adding either foreign aid or remittances is likely to increase migration.

If trade liberalization is significant enough to increase migration, adding foreign aid is likely to dampen that effect, and remittances will have no effect.

Migration is also affected by geography, by migration laws (in either sending or receiving countries), and by transport technology.

Future work will deal with the welfare consequences of migration, including losses in social capital.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to examine the determinants and effects of international migration. The study was funded by the Bank's Research Support Budget under the research project "International Migration, Trade Policy, and Capital Flows" (RPO 679-05). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (20 pages).

1377. Macroeconomic Adjustment to Capital Inflows: Latin American Style versus East Asian Style

Vittorio Corbo and Leonardo Hernández
(November 1994)

Tight fiscal policy seems to be the best way to maximize benefits from capital inflows while reducing their side effects (especially appreciation of the real exchange rate). Increasing public saving — viewed favorably by international investors — seems to be the only way to protect the real exchange rate in the long run.

In recent years, private capital inflows to some developing countries have increased sharply. This increase has provided the financing needed to enhance the use of existing capacity and to raise investment levels.

But capital inflows produce their own problems. They can increase inflation and lead to exchange rate appreciation, for example.

Corbo and Hernández review the macroeconomic repercussions of an increase in capital inflows. Generally, it will result in appreciation of the real exchange rate, a larger nontradable sector, a smaller tradable sector, and a larger trade deficit.

Under a fixed exchange rate regime, it will also result in faster inflation and an accumulation of foreign reserves.

Can government intervention minimize the size and effects of real exchange rate appreciation? Corbo and Hernández discuss different mechanisms that can be used to limit that appreciation — and discuss the difference, in this respect, between portfolio investment and external debt.

Finally, they review and compare the recent experiences of four Latin American countries (Argentina, Chile, Colombia, and Mexico) and five East Asian countries (Indonesia, Malaysia, the Philippines, the Republic of Korea, and Thailand), and discuss how these countries have dealt with the macroeconomic side effects of capital inflows. Among their findings:

- All nine countries have avoided a permanent, significant increase in inflation, it can be argued. In Argentina and Mexico inflation has been decreasing for three or four years, and in the other seven countries it has remained stable.
- The countries that received the largest average capital inflows (as a proportion of GDP) in 1989–92 are *not* those that experienced the greatest exchange rate appreciation. In fact, the countries with the greatest capital inflows (Chile, Malaysia, and Thailand) have experienced either depreciation or low appreciation of their currencies. (Appreciation was lower in Thailand than in Korea despite much greater capital inflows in Thailand.)
- Countries with decreasing government consumption as a percentage of GDP (Chile, Indonesia, and Malaysia) showed less appreciation of the real exchange rate.

• Countries with increasing government consumption as a percentage of GDP (Argentina, Korea, Mexico, and the Philippines) showed the greatest appreciation of the real exchange rate, despite not receiving the greatest capital inflows.

This paper — a product of the International Finance Division, International Economics Department — is part of a larger effort in the department to analyze the consequences for developing countries of the new surge in capital inflows. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room S8-114, extension 31047 (35 pages).

1378. Mexico after the Debt Crisis: Is Growth Sustainable?

Daniel Oks and Sweder van Wijnbergen
(November 1994)

The restructuring of Mexico's external debt under the Brady deal "smoothens" the external transfer to foreign creditors. The "smoothening" of the external transfer had far more impact on Mexico's domestic economy than did the reduction of debt and debt servicing per se. The financing of the expansion that ensued was dominated by private capital flows. Are the large current account deficit and its financing cause for concern? Is growth sustainable?

The story of Mexico's involvement in international capital markets is one of riches to rags and back to riches again. Four periods can be distinguished:

• Stable, steady international borrowing through the 1950s and 1960s.

• Heavy reliance on international loans through commercial bank syndicates from the mid-1970s until 1982.

• Massive capital flight, zero access to private lenders, and complete reliance on official sources from 1982 to 1990.

• Massive return of flight capital, a continued drought in syndicated loans, but heavy expansion of foreign direct investment, portfolio investment, and bond placement.

Easing the transition from the third to the fourth period was the restructuring of Mexico's external debt under the Brady deal, which ultimately reduced — and "smoothened" — the net transfer to foreign creditors. Oks and van Wijnbergen argue that "smoothening" the external transfer had far more impact on the domestic economy than the reduction of debt and debt servicing per se.

The financing of the expansion that ensued in the fourth period differs dramatically from what was observed earlier in Mexico's history. Foreign capital inflows were dominated by foreign direct investment and especially portfolio investment and, unlike in the second period, most inflows financed the domestic private sector. Are the current rate and pattern of borrowing — at levels unforeseen at the time of the Brady deal — a cause for concern? Is growth sustainable?

To answer these questions, Oks and van Wijnbergen analyze the domestic macroeconomic counterpart of the large capital inflows and high current account deficits of the early 1990s.

Whether growth is sustainable depends on the level of domestic saving. But even if domestic saving increases, the transition to sustainable growth is unlikely to be smooth because the slowdown in consumption growth (associated with improved saving) is likely to be contractionary.

The outcome depends on how investment and net exports respond. Oks and van Wijnbergen analyze cyclical and structural factors of investment and the external sector, and their interactions with Mexico's exchange rate and monetary policy, to interpret the recession in the second half of 1993.

They emerge from their analysis with cautious optimism about Mexico's medium-term prospects.

This paper — a product of the Country Operations Division 1, Latin America and the Caribbean, Country Department II — is part of a larger effort to assess the sustainability of the recovery in the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sahra Harbi, room H11-123, extension 37143 (42 pages).

1379. Financing Infrastructure in Developing Countries: Lessons from the Railway Age

Barry Eichengreen
(November 1994)

The countries that stand to gain most from investments in infrastructure (transportation, communication, and power generation) are often the countries least able to finance them — yet their income and productivity are often depressed for lack of that same infrastructure. Eichengreen looks to the nineteenth century to identify ways to break out of this low-level equilibrium trap.

Arguments for financing infrastructure development through government subsidies and foreign borrowing meet with increasing skepticism. Numerous "white elephants" subsidized by governments have strengthened doubts about the efficacy of public finance, and the debt-servicing problems of the 1980s have weakened arguments for foreign borrowing.

Recent innovative suggestions for financing infrastructure investments in developing countries have a back-to-the-future quality. At the heart of the nineteenth-century debate on financing infrastructure development — especially railways — lay certain concepts: relying on private finance, encouraging the growth of domestic financial markets, and choosing financial instruments that minimize the risk of dependence on foreign funds. Eichengreen reviews the historical record in an attempt to glean lessons for developing countries today.

In the nineteenth century, much as in many of today's less developed and less liberalized economies, not all the informational and contractual preconditions for efficient private or commercial finance of infrastructure projects prevailed. In some regions, it was difficult to tap investors at home or abroad. Many countries lacked the private institutions (such as universal banks) and public ones (such as regulatory agencies) needed to facilitate monitoring, to discipline management, and to ensure an adequate flow of information to investors.

In places as diverse as Canada, India, Spain, and the United States, getting enough finance often required that the government provide collateral (land grants) and bond guarantees — especially where asymmetric information caused credit rationing.

The main lesson: Exploiting nontraditional approaches to financing infrastructure investment requires action on two fronts: liberalizing and developing domestic financial markets, and reforming administrative mechanisms that ensure accountability from enterprises enjoying government subsidies or guarantees.

This paper — a product of the Office of the Vice President, Development Economics — is one in a series of background papers prepared for *World Development Report 1994* on infrastructure. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact the World Development Report office, room T7-101, extension 31393 (48 pages).

1380. Transfers and the Transition from Socialism: Key Tradeoffs

Kathie Krumm, Branko Milanovic, and Michael Walton
(November 1994)

Every society faces a choice between security and growth. Here, the tradeoffs between the two in the formerly socialist economies are spelled out.

The old days in the now transition societies were characterized by stagnant incomes, rationed goods, and few civil liberties, but a high degree of income security. The early days of reform have brought crashing incomes, more goods, civil liberties, and rising insecurity. Most countries are set on a course toward some form of capitalism, which by definition means greater risk-taking, less security, and almost certainly greater inequality in income distribution.

Should transfers be used to compensate for increasing insecurity and poverty? The short-run drop in incomes, the heritage of cradle-to-grave state protection, and the Western European vision of the welfare state provide compelling motivation for using transfers.

But, argue Krumm, Milanovic, and Walton, there are significant tradeoffs between moving to a welfare state and shifting to dynamic, growing economies. The transition economies don't have the real levels of productivity or the tax bases needed to sustain the kind of tax effort a large-scale system of transfers would require. Short-run gains in security could in the long run mean insufficient private and public capital accumulation and lack of competitiveness. The result could be financial collapse (as witnessed in Ukraine) or an extreme form of Eurosclerosis (a possibility for Hungary or Poland). Under either scenario, those whom the transfers are supposed to protect — the old, the poor, the disabled, and the unemployed — are most likely to suffer disproportionately over the medium to long term, and probably even in the short term.

In any viable scenario, transfers are likely to be important for both welfare and political reasons. Some options for providing transfers are more likely to be consistent with macroeconomic imperatives and to have relatively low adverse-incentive effects — for example, flat-rate (or flatter) pensions at quite low replacement rates, and local rather than general (income-tested) social assistance.

Krumm, Milanovic, and Walton recommend using intrinsically temporary measures — such as temporary employment schemes — in the transition. This avoids a permanent transfer burden while recognizing the severity of the interim transition period. In sum, the alternative of less reliance on comprehensive transfers puts more pressure on private coping mechanisms and will, in the short run, increase risk. But it may be the price of a viable transition to the growth that is essential to success.

This paper — a joint product of the Office of the Regional Vice President, Europe and Central Asia Regional Office and the Transition Economies Division, Policy Research Department — is part of a larger effort in the Bank to study social protection in the transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kathie Krumm, room H12-081, extension 34263 (49 pages).

1381. Welfare Economics, Political Economy, and Policy Reform in Ghana

Ravi Kanbur
(November 1994)

Economic policy reform was not invented in Africa in the 1980s. It has always been with us, everywhere. Economic policy reform is about gainers and losers, and losers will fight, perhaps viciously, to stop it. The winners are not as likely to push for reform with the same vigor, but there comes a point at which their interests become overwhelming and opposition crumbles.

Welfare economics develops the logic of how the gains of the gainers and the losses of the losers *should* be weighed against each other, in a specific ethical framework. Political economy develops the logic of how they *will* be weighed against each other, in the context of sociopolitical institutions.

Kanbur applies the disciplines of both welfare economics and political economy in this evaluation of policy reform in Ghana. When considerations from both disciplines are aligned, he explains, policy reform not only should be enacted but is also likely to be enacted. Often, though, there is no such alignment, so reforms that might improve social welfare do not succeed.

Analysts, says Kanbur, should consider past reforms from both perspectives, and should learn from history, in evaluating proposed reform — so they can assess both the desirability and the feasibility of reform.

Policymakers, on the other hand, should work toward organizing and mobilizing the gainers from reform that would advance social welfare, so that resistance to such reform by the losers can be overcome.

In an example from history, he explains that Britain's debate over the Corn Laws — basically a device for protecting domestic production of grain from cheap imports — dominated for more than a decade in the nineteenth century. It eventually split the Tory party. Britain's transformation from an agrarian nation to a manufacturing one spelled the decline of the power of the landed aristocracy and the ascendance of manufacturing. In the end, the Corn Laws were repealed because of the growing power of the urban masses and their employers, and the debate soon turned to protection against imports from fast-industrializing France and Germany.

Such episodes from history help us understand the protection of rice in Japan today, for example, and — the focus of this paper — the past decade of reform in Ghana, and the decade that awaits.

Kanbur argues that the political economy of policy reform in Ghana is likely to prove tougher in the second decade than in the first, for three reasons: (1) the economic situation in the second decade is no longer one of absolute disaster, with only one way to go; (2) in the second decade, policy reform will have to coincide with the transition from military to constitutional rule; and (3) the nature of the reforms to be undertaken in the second decade is different from that of those undertaken in the first.

This paper — a product of the Ghana Resident Mission, Western Africa Department — is the text of the First Annual Social Sciences Lecture of the Ghana Academy of Arts and Sciences, delivered in Accra in May 1993. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Michèle Youssef, room J5-250, extensio · 34614 (25 pages).

1382. Saving, Investment, and Growth in Developing Countries: An Overview

Klaus Schmidt-Hebbel, Luis Serven, and Andrés Solimano
(November 1994)

The most effective way to promote investment, innovation, and growth is to provide a supportive policy environment and institutions. The essentials are macroeconomic stability, undistorted prices, well-defined and well-enforced property rights, an environment that keeps business costs low, and political institutions that foster social consensus and political stability. Government should also provide adequate infrastructure and human capital investment — whether as public projects or with the help of the private sector.

The 1990s have seen renewed interest in themes of economic growth and development. This is a welcome change after a decade and a half during which macroeconomics was dominated by a concern with short-term adjustment and stabilization issues — and basic problems of growth, capital accumulation, and the generation of savings were largely ignored.

Schmidt-Hebbel, Serven, and Solimano draw three general lessons from recent literature on saving, investment, and growth:

- Despite empirical evidence about virtuous circles of heavy saving and investment and rapid growth, the relationship between the three is complex, with causality running in several directions.
- Still, saving often seems to follow, rather than precede, investment and growth, contrary to the Mill-Marshall-Solow interpretation.
- Investment and innovation are the centerpieces of growth. In this regard, the new literature on growth represents a decided (if unintended) return to the tradition initiated by Marx, Schumpeter, and Keynes.

Saving may not be the chief driving force behind growth, but ensuring an adequate savings level must remain a central policy concern — to ensure enough financing for capital accumulation and to prevent inflationary pressures or balance of payments disequilibria or both. And encouraging private saving may be essential to expand investment, considering capital market imperfections and liquidity constraints on firms and households in many developing economies. Four policy conclusions emerge:

- Public saving does not crowd out private saving one-to-one, so increasing public saving is an effective direct way to raise *national* saving.
- Foreign saving should be allowed and encouraged to support domestic investment — even if it also helps finance consumption — as long as the macroeconomic and regulatory framework is adequate.
- Higher private saving should not be expected in response to the liberalization of interest rates. Market-determined interest rates will improve financial intermediation, the quality of portfolio choices, and the quality of investment — but not necessarily the volume of savings. Pension reform may be a better way to mobilize domestic resources.
- Potentially large externalities associated with investment would seem to suggest the need for an "activist" investment policy. But a better way to promote investment and growth is a supportive policy and institutional environment, ensuring macroeconomic stability, social consensus, and a low cost of doing business.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — was presented at the Economic Growth and Long-Term Development conference, held in El Escorial, Spain, July 11–13, 1994. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Emily Khine, room N11-061, extension 37471 (48 pages).

1383. Rural Demand for Drought Insurance

Madhur Gautam, Peter Hazell, and Harold Alderman
(November 1994)

There appears to be an unmet demand for insurance against drought risks in poor rural areas.

Many agricultural regions in the developing world are subject to severe droughts, which can have devastating effects on household incomes and consumption, especially for the poor. To protect consumption, rural households engage in many different risk management strategies — some mainly risk-reducing and some simply coping devices to protect consumption once income has been lost. An important limitation of these traditional risk management strategies is their inability to insure against covariate risks. And they are costly. The absence of formal credit and insurance institutions, which offer an efficient alternative by overcoming regional covariance problems and reducing the cost of risk management, amounts to a market failure. Past research has paid much more attention to the supply-side reasons for this market failure than to the demand side question of whether there exist financial instruments that farmers want and would be willing to pay for.

Gautam, Hazell, and Alderman use a dynamic household model to examine the efficiency of drought management strategies used by peasant households. An attractive feature of the method is that it exploits actual production (input-output) data and does not deal with the usually unreliable data on household consumption and leisure activities. The model is applied to a two-year panel of data on households from five villages in Tamil Nadu (South India). The sample is small, but the data are special, as one of the two years was a severe drought year.

The results indicate that agricultural households exhibit significant risk-avoidance behavior, and that even though they may use a range of risk management strategies, there still remains an unmet demand for insurance against drought risks. The study did not estimate the likely costs of supplying drought insurance, but the latent demand in the study region is strong enough to more than cover the breakeven rate of approximately the pure risk cost (the probability of drought) plus 5 percent administration costs.

The findings confirm the inadequacies of traditional strategies of coping with droughts in poor rural areas. Because of the catastrophic and simultaneous effects of droughts on all households over large areas, there is limited scope for spreading risks effectively at the local level. Either households must increase their savings significantly (a problem with low average incomes and an absence of safe and convenient savings instruments), or more effective risk management aids are needed that can overcome the covariation problem. Improved financial markets (with both credit and savings facilities) could be helpful, particularly if they intermediate over a larger and more diverse economic base than the local economy. Alternatively, formal drought insurance in the form of a drought (or rainfall) lottery might be feasible, and the results suggest that it could be sold on a full-cost basis.

This paper — a product of the Agricultural Policies Division, Agriculture and Natural Resources Department, in collaboration with the Poverty and Human Resources Division, Policy Research Department — is part of a study funded by the Bank's Research Support Budget under research project "Management of Drought Risks in Rural Areas" (RPO 677-51). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC, 20433. Please contact Ciceiy Spooner, room N8-039, extension 30464 (44 pages).

1384. Fiscal Decentralization and Intergovernmental Finances in the Republic of Albania

David Sewell and Christine I. Wallich
(November 1994)

Central budget transfers to local governments will remain the dominant source of financing for many functions, but Albania is on the path toward autonomous, responsive local governance. Local governments can already deliver some infrastructure services, but for some — especially education and health — it is important to ensure national service standards.

Economic decentralization emerged as an issue in Albania following the first election of a noncommunist government in Albania in 1992. It is one of many challenges in creating a fiscal system that supports reform.

Decentralization has begun with the central government's transferring spending responsibilities primarily for some local infrastructure services to local governments. But, given Albania's small size, it is unclear whether "people" services such as education and health care need to be delegated to local governments. Although the destruction of local health and education facilities accompanying the demise of the old regime argues for giving communities a greater sense of ownership of these facilities, they should not be handed down without mechanisms to ensure uniform service standards.

Draft laws focus on the transfer of assets (schools and clinics) to local jurisdictions but are vague about responsibilities for recurrent spending. And because local spending responsibilities are expanding, local governments need increased revenues to finance them. Providing an adequate social safety net is vital in Albania — the poorest of the economies in transition — and the government has taken steps to ensure that parts of it are locally administered, though centrally funded.

The key to a well-designed intergovernmental financial system is to clearly define spending responsibilities so that a revenue system can be designed to accommodate them. Such a system would combine revenue-sharing, own-source revenues, and intergovernmental transfers.

Tax-sharing of central government revenues based on district of origin cannot be the only means of local finance in Albania, as most revenues are collected in only a few districts. To meet financial needs, local governments need some authority over significant own-source revenues (such as user charges and property and vehicle taxes). Privatization revenues can also help local governments but only in the short run, as they are nonrecurrent.

Matching grants with spillover effects may be appropriate. And for low-income regions incapable of meeting their spending needs alone, a transparent, equalizing transfer system should be developed. Albania's draft laws allow for this possibility, having established constituent and independent budgets for the local level.

This paper — a product of the Infrastructure Team, Europe and Central Asia, and Middle East and North Africa regions' Technical Department, and the Office of the Director, Europe and Central Asia, Country Department II — is part of a larger effort in the Bank to study the problems of the development of local and subnational governments and issues of intergovernmental finance in the economies in transition. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Gemma Langton, room H11-075, extension 38392 (57 pages).

1385. Fiscal Federalism Dimensions of Tax Reform in Developing Countries

Robin Boadway, Sandra Roberts, and Anwar Shah
(November 1994)

This paper presents economic principles and practical guidelines for the assignment of revenue raising responsibilities among different levels of government for countries with more than one level of government. It also outlines tax harmonization and coordination strategies to avoid inefficiencies and inequities arising from decentralization of revenue raising authority.

Boadway, Roberts, and Shah propose four economic principles for use in deciding taxing responsibilities for various levels of government. These are:

- *Efficiency of the internal common market.* For efficiency in internal common market, taxes on mobile factors and tradable goods should either be assigned to the national government or coordinated among subnational governments.
- *National equity.* Progressive redistributive taxes ought to be assigned to the level of government having responsibility for redistribution, usually the national government. Subnational governments could levy supplementary flat rates on the federal tax base.
- *Administrative costs.* To minimize collection, administration, and compliance costs, a tax should be assigned to the level likely to be best informed about its base. This suggests assigning real property taxation to local governments and corporate income taxation to the national government.
- *Fiscal need.* To ensure accountability, revenue means should be matched as closely as possible to revenue needs. Thus tax instruments intended to further specific policy objectives should be assigned to the level of government having the responsibility for such a service. Thus progressive redistributive taxes, stabilization instruments, and resource rent taxes would be suitable for assignment to national government; while tolls on intermunicipal roads are suitably assigned to state governments. Some resource taxes, such as royalties and fees and severance taxes on production and/or output, are designed to cover costs of local service provision and could be assigned

to subnational governments. In addition, subnational governments could also impose taxes to discourage local environmental degradation. In countries with a federal level VAT, it may be too cumbersome to have subnational sales taxes. In such circumstances, the fiscal need criterion would suggest allowing subnational governments access to taxes which are traditionally regarded as suitable for national administration, such as personal income taxes.

The authors also stress the importance of tax harmonization and coordination in preserving internal common market, reducing collection and compliance costs and helping to achieve national equity objectives and suggest methods of achieving such coordination vertically (between the federal and subnational governments) and horizontally (among subnational governments).

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to reform fiscal systems in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37754 (29 pages).

1386. EU Bananarama III

Brent Borrell
(December 1994)

New European Union banana policy extends protection, favors inefficient producers, and is a costly way to provide aid. The European Union and the favored Caribbean countries could all gain much by shifting from banana *aid to formalized, targeted general development aid.*

On July 1, 1993, the European Union (EU) adopted a unified banana policy that is even more distortionary and costly than some of the disparate national policies it replaced. Before, some EU countries gave preferred market access and high prices to banana producers from selected developing countries in Africa, the Caribbean, and the Pacific, and from EU territorial suppliers. This preferential status was regarded as a form of aid to countries with historical ties to certain EU countries (France, Great Britain, Italy, Portugal, and Spain). Other EU countries (Belgium, Denmark, Germany, Ireland, Luxembourg, and the Netherlands) granted no preferences and either had free trade policies or imposed only low tariffs.

The earlier quota-based national policies were inefficient because the main benefits of the quotas and high prices were enjoyed by importers, wholesalers, and retailers in the quota-restricted countries. Under the unified EU policy, quotas, high prices, and preferential access provide aid to preferred suppliers, but cost EU consumers dearly and the quota restrictions hurt nonpreferred suppliers (mainly Latin American countries). But the main problem with the new policy is that it extends protection (and consequent ineffiencies) to countries where it didn't exist before .

As the costs of the new EU policy become better understood, new forces are emerging that will probably create pressure for change over the next decade. Banana producers who now receive aid through preferential access to the EU banana market are likely to lose those preferences. This could deal a hefty blow to several small Caribbean island economies and some African countries. But much more efficient alternative mechanisms exist through which the European Union could grant aid to these economies.

The European Union and the favored Caribbean countries could all gain much by shifting from *banana* aid to formalized, targeted general development aid.

This paper — the third "bananarama" paper and a joint product of the International Trade Division, International Economics Department, and the Office of the Chief Economist, Latin America and the Caribbean Regional Office — is part of a larger effort in the Bank to analyze international commodity policies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Grace Ilogon, room R2-072, extension 33732 (33 pages).

1387. Fiscal Decentralization and the Size of Government: An Extension with Evidence from Cross-Country Data

Jaber Ehdaie
(December 1994)

Countries, such as economies in transition, that want to reduce the size of the public sector should decentralize both *taxing and spending decisions.*

Prior analyses of the relationship between fiscal decentralization and the size of government treat fiscal decentralization as the decentralization of either taxing or spending powers. But decisions about taxation and spending are inseparable.

Ehdaie corrects this deficiency and analyzes the effect of simultaneous decentralization of taxing and spending powers — "fiscal decentralization" — on the overall size of the public sector using cross-country data.

The econometric results of his study show that:

- The simultaneous decentralization of the national government's taxing and spending powers tends to reduce the size of the public sector.
- Revenue-sharing arrangements in which decisions about taxation are made by the national government tend to eliminate the constraining effect of the decentralized spending power.

What do these findings suggest?

Countries, such as economies in transition, that want to reduce the size of the public sector should decentralize both taxing and spending decisions.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to study the economic consequences of fiscal decentralization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37699 (18 pages).

1388. Does Voice Matter? For Public Accountability, Yes

Samuel Paul
(December 1994)

When users of essential but monopoly services do not have the option of choosing an alternative service, can they influence the accountability of service providers through such voice mechanisms as collective action by user groups? Apparently so.

Recent theory posits that accountability in public service can be enhanced by the use of "exit" and "voice" mechanisms.

With exit mechanisms, users of public services can choose alternative sources of supply. Exit mechanisms are viable when there is competition. They are not viable for essential services for which government is the sole provider.

Voice mechanisms are the more likely option when the service provider is a monopoly. With voice mechanisms — for example, public meetings, local representation on public committees, or collective action by user groups — the public seeks better performance from public service providers without opting for alternative sources of supply.

Considerable research has been done on how and whether exit mechanisms improve organizations' performance and accountability. Little research has been done on whether voice mechanisms make service providers more accountable.

Paul addresses that issue by investigating whether providers of irrigation services in Indonesia were more accountable when the public used voice mechanisms. He asked these questions: Did the use of voice improve public accountability in irrigation services? If accountability improved, did service outcomes also improve? He focused on how voice works and the mechanisms through which it influences accountability.

He found that water user associations did make providers of irrigation services more accountable and that crop intensity increased as a result.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to investigate the influence of institutions on policy outcomes. The study was funded by the Bank's Research Support Budget under the research project "Strengthening Accountability in Public Services" (RPO 677-65). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Bill Moore, room N9-055, extension 35261 (51 pages).

1389. Ruble Overhang and Ruble Shortage: Were They the Same Thing?

Patrick Conway
(December 1994)

"Ruble overhang" and ruble shortages in the Soviet Union and its successor states were manifestations of the same economic phenomenon: the household sector's inability to convert financial assets into purchasing power over commodities.

Economists and policymakers in the Soviet Union before its dissolution were concerned about the growth of the "ruble overhang." The concern was that the rationing of consumer goods evident in prior years had led to an excess of purchasing power in households. Price liberalization was expected to lead to a jump in consumer prices as households tried to exercise their purchasing power.

But after the Soviet Union dissolved, a new concern emerged: a ruble shortage. Throughout the ruble currency area, governments and state enterprises could not get enough rubles to pay wages and pensions. As a result, households were unable to make the purchases they wanted to make. Ruble shortages contributed greatly to the progressive deterioration of the ruble area, from its beginning with fifteen members to its present membership of two.

The names given to these two episodes — "ruble overhang" and "ruble shortage" — are misleading, because they are both manifestations of the same phenomenon. In both cases, forced saving led to a reduction in purchasing power and downward pressure on inflation.

The difference was in the mechanism that induced forced saving.

For the ruble overhang, the government maintained price rigidity; there was nonprice rationing of output that was insufficient to satisfy demand at those rigid prices.

For the ruble shortage, the government — through the government-controlled banking system — imposed the holding of bank deposits on households, through mandatory wage deposit programs and through the de facto inconvertibility of deposits to currency.

The result was the same: a rationed household sector unable to trade financial assets for commodities.

This paper — a product of the Country Operations 2 Division, Europe and Central Asia, Country Department IV — is part of a larger effort in the region to study financial sector and macroeconomic policies in transition economies. The study was funded by the Bank's Research Support Budget under the research project "The Ruble Shortage Phenomenon in Members of the Ruble Currency Zone" (RPO 678-08). Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lenora Suki, room H2-096, extension 33974 (20 pages).

1390. Regional Integration and the Baltics: Which Way?

Pirittа Sorsa
(December 1994)

Some say the Baltics should look to greater trade integration with the East, but Sorsa argues that opportunities are better for trade with the West.

Some propose that the Baltics seek deeper trade integration with the East to maintain existing trade flows and because the Baltics have had little market access to the West.

Sorsa argues against such integration, proposing instead that the Baltics improve trade relations with the West, where market access is likely to be less and less of a problem.

After assessing factor endowments, and using a gravity model, Sorsa predicts that more than 90 percent of Baltic trade will be with non-former Soviet Union countries. Initial exports are likely to be labor- and resource-intensive goods, because it is easier to adjust to Western standards with those goods. But in the long run, the Baltics will have a comparative advantage in skill-intensive manufactures, as their years of schooling are among the highest in the developing world. (Exports of labor- and resource-intensive products, especially from Estonia, have already increased. Estonia is the most advanced of the Baltics in its transition to a market economy.)

Sorsa predicts the Baltics will eventually trade mostly with Europe.

She says the Baltics are unlikely to benefit from deeper trade integration with the East because:

- The lower adjustment costs and the benefits of maintaining viable industries resulting from sustained trade flows with the East are likely to be outweighed by the cost of lost opportunities in the West.
- Temporary preferential arrangements entail high administrative costs and are rarely temporary.
- Preferential trade could mean slower adjustment and powerful lobbies against change.
- Numerous nontariff barriers with the East, slow and unreliable payments, unstable currencies, and barter arrangements increase transaction costs and impede the creation of more trade.
- Preferential trading with Russia or Ukraine entails the risk of increasing ex-

ternal protection for the more liberal Baltics. This risk is magnified by the relatively slow adjustment of Russia and other former Soviet Union republics and the faster reform in the Baltics.

The recent free trade agreement among the Baltics allows countries to maintain independent external trade policies, without creating the many administrative problems of a union. Free trade agreements will not only improve market access but may help lock in reforms at home, which may help attract foreign investment. With liberalized trade, competition from liberal Estonia may help reduce protection levels in Latvia and Lithuania.

After initial adjustment, trade with the West will promote faster, more sustainable growth. Allocation of resources based on world prices, and transfer of technology, will increase productivity growth. Trade with the West will probably also lower environmental costs.

OECD protectionism is unlikely to become an insurmountable obstacle to more Baltic exports to the West. Recent statements about Europe turning its back on the reforming East seem exaggerated, at least for the Baltics. Their position as the former Soviet Union member most discriminated against by Europe is changing, as they rapidly climb the various pyramids of access to European trade.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to monitor and advise on the trade policies of transitional economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, extension 37947 (48 pages).

1391. Where in the World Is Population Growth Bad?

Jeff Kling and Lant Pritchett
(December 1994)

Would economic growth be better if population growth were slower? Everybody seems to agree the answer is "it depends" — but who knows on what?

Would economic growth be better if population growth were slower?

There are two apparently opposite answers to this question. Advocates of policies to reduce population growth rates are completely convinced by the common sense view that rapid population growth greatly hurts economic growth because of scarcer natural resources, reduced investments (per child) in health and education, and lower rates of capital accumulation per worker.

The empirical evidence (usually marshalled by economists) provides an equally convincing, and seemingly contradictory, answer: There is no strong, stable relationship between countries' population growth and their per capita output growth rates.

Kling and Pritchett propose an empirical reconciliation between the two views.

No one really believes that the impact of a 10-percent increase in population would have the same impact in Bangladesh as it would have in Canada, or even the same impact in crowded Malawi or Rwanda as in sparsely populated Zaire or Zambia. But if the impact of population growth on economic growth differs across countries, it might *on average* be small (even statistically indistinguishable from zero) in the usual empirical estimates, even though the negative impact in *particular* countries might well be large.

The real answer might be, "It depends on country conditions." But this answer is uninformative unless one can show *which* country conditions "it depends" on. Is it most harmful in poor countries? In land-scarce countries? In countries with poor policies? Kling and Pritchett try to discover the conditions under which population growth hurts economic performance by allowing interactive terms for country conditions.

The empirical results do not give confirmation to any of the plausible distinctions across country conditions — the impact of population growth is not worse in poor countries and is not worse in land-scarce countries. Their measure of resource scarcity may be one reason for this failure to find an interaction, but while it failed to produce satisfying results, it is a major conceptual improvement over even simpler indicators, such as population density, or the empirical literatures studied: no interaction.

Identifying the conditions under which population growth is a drag on economic growth should be a priority as efforts to reduce population growth should be concentrated in those countries where the efforts give the greatest payoff.

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to investigate the causes and consequences of rapid population growth. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheila Fallon, room N5-033, extension 38009 (37 pages).

1392. Some Economic Consequences of the Transition from Civil War to Peace

Jean-Paul Azam, David Bevan, Paul Collier, Stefan Dercon, Jan Gunning, and Sanjay Pradhan
(December 1994)

Evidence from Africa, especially Ethiopia and Uganda, sheds light on why, when a civil war ends, it takes time to claim a peace dividend — and what governments can do to foster the confidence of a fearful private sector in war's aftermath.

Drawing on evidence from Africa — especially Ethiopia and Uganda — the authors of this volume draw conclusions about economic policy in the aftermath of civil war. A sample of conclusions follows.

Civil wars differ from international wars. They are informal, often have no clear beginning and end, weaken rather than strengthen the authority of the state, and leave two unreconciled armies to be demobilized within one territory. Civil wars erode the institutions of civil society, leading to a decline in the stock of social capital, which takes some time to restore. Private investment and government revenue are slow to recover, and military expenditures are not easily reduced. As a result, there is little or no peace dividend in the short run.

The period of transition to peace is a particularly suitable time for radical policy reform, despite the high degree of polarization typical in countries engaged in civil war. And speedy reform, far from increasing uncertainty, is likely to reduce it. After a civil war, private agents are fearful both of each other and of the government. This, perhaps even more than physical damage to infrastructure, hinders private-sector-led recovery, as irreversible investment is delayed despite being financeable. The transition to peace is primarily the transition from fear and the defensive responses that became ingrained in wartime. The peace dividend comes as a gradual recovery of confidence induces repatriation of financial and human capital.

Such confidence can be boosted by the early sequencing of investment-sensitive policy reforms and by preserving low inflation through direct consumer price index targeting. Lack of confidence can be compensated for by temporary undervaluation of the exchange rate, or by temporary tax incentives for investment which, however, may prove more difficult to make credibly time-bound. Finally, aid can permit accelerated rehabilitation of the infrastructure (especially transport networks) needed to return to a market economy.

Contrary to the study's hypothesis, the authors found that demobilization — at least in Uganda — did not lead to a significant upsurge in insecurity. In the short term, demobilization significantly reduced crime, unless the demobilized lacked access to land. If the demobilized returned to their home areas and were given some assistance, with identifiable exceptions they were able to find income-earning opportunities.

This paper — a product of the Public Economics Division, Policy Research Department — is part of a larger effort in the department to examine components of public spending (such as military expenditures) and the interface between the public and private sectors. The study was funded by the Bank's Research Support Budget under the research project "Some Economic Consequences of the Transition from Civil War to Peace" (RPO 677-31) and by the Africa Regional Office. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Carlina Jones, room N10-063, extension 37699 (139 pages).

1393. The Interface of Trade, Investment, and Competition Policies: Issues and Challenges for Latin America

J. Luis Guasch and Sarath Rajapatirana
(December 1994)

Latin American countries must try to adopt competition policies that enhance gains from trade reform and raise the returns on investment.

Latin American countries have not had much experience with competition policy. Restricted trade policies, together with no competition policy, have often resulted in domestic monopolies.

Trade liberalization in the 1980s and 1990s has strengthened import competition, but trade policies alone cannot create a competitive economic environment. And trade policy as an instrument of competition policy (limited as it has been) has been constrained by a disproportionate amount of nontraded goods, vertical integration, and distribution monopolies — and sometimes the use of antidumping, countervailing, and safeguard measures.

Competition policies — such as antitrust laws, merger controls, and other regulatory measures — can prevent exclusionary practices, collusion among competitors, and the abuse of market power. Allowing foreign ownership and liberalized investment regimes will further enhance domestic competition by adding market presence.

Guasch and Rajapatirana contend that trade and competition policies must complement each other and that when they do, welfare improves. Tensions between the two policy areas arise because of globalization, regional policies, technical barriers, certain kinds of industrial policy, and macroeconomic exigencies.

Trade policy itself can be used for protection even without high tariffs or quantitative restrictions. Antidumping, countervailing, and safeguard measures limit rather than promote competition. These measures — which should be GATT-compatible by law and competition-promoting in spirit — must be used judiciously. Guasch and Rajapatirana favor the use of safeguards rather than other measures to provide temporary protection for firms facing import surges.

Latin American countries have recently made impressive strides in trade reform, but have made limited use of competition policies. Guasch and Rajapatirana argue for more use of competition policies to enhance gains from trade reform. They also argue for harmonization of competition policies as these countries reduce barriers against each other through regional agreements.

More efforts should be made to:

- Create favorable competitive environments.
- Harmonize trade, regulatory, and competition policies as well as conflict resolution mechanisms.
- Strengthen enforcement mechanisms and make them binding.

This paper — a product of the Advisory Group, Latin America and the Caribbean, Technical Department — is part of a larger effort to disseminate lessons about policy and institutional reform that are relevant to the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Joy Troncoso, room I8-314, extension 37826 (29 pages).

1394. Macroeconomic Reform and Growth in Africa: *Adjustment in Africa* Revisited

Lawrence Bouton, Christine Jones, and Miguel Kiguel
(December 1994)

Improved macroeconomic policies in Sub-Saharan African countries are still associated with improved performance, but countries fall short of having sound policies. Only steady and increased policy reform will convince investors of the credibility of reform and thus of a more favorable investment climate.

The 1994 World Bank study *Adjustment in Africa: Reforms, Results, and the Road Ahead* assessed the extent of, and economic payoffs from, policy reform in 29 countries in Sub-Saharan Africa in the mid-1980s and 1990s. Here Bouton, Jones, and Kiguel update the results of that report with 1992 macroeconomic data and explore some issues in more detail.

The conclusions of the earlier report still hold: Improved policies are still associated with improved performance, but countries fall short of having sound policies. In fact, the 1991–92 policy stance was not as strong as the 1990–91 stance, reflecting the slow, fragile, and often reversal-prone nature of macroeconomic reform in Africa.

Getting the real exchange rate right and reducing the fiscal deficit should be the top priority for restoring growth. Countries that significantly reduced their budget deficits and reduced the black market premium (by devaluing) enjoyed the greatest payoffs from reform. Devaluation of the CFA franc in January 1994 represents a real opportunity for the CFA franc zone countries to restore growth.

Many countries have made considerable progress in moving toward competitive real exchange rates. There still remains the challenge of reducing budget deficits in ways consistent with poverty-reducing growth. Hence the need to reorient public spending to the essential tasks of government, especially providing social services. Reform in two areas will be important to sustaining fiscal reform: implicit subsidies to public enterprises must be cut, and the cost of restructuring the banking sector must not be absorbed by the budget.

Policy reforms undertaken so far have paid off in higher growth rates, but the level of growth is still too low to sustain rapid rates of poverty reduction. Increased growth seems to have come more from efficient use of existing capacity than from new investment. Only steady and increased policy reform will convince investors of the credibility of reform and thus of a more favorable investment climate.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of a larger effort in the department to understand the links between policy reform, growth, and poverty reduction. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rebecca Martin, room N11-059, extension 39026 (68 pages).

1395. A Typology of Foreign Exchange Auction Markets in Sub-Saharan Africa

Janine Aron and Ibrahim Elbadawi
(December 1994)

Transparent policy rules and conduct are of paramount importance to the success of foreign exchange auctions.

Aron and Elbadawi compare and contrast the design and outcomes of different foreign exchange auctions in four countries in Sub-Saharan Africa and present a typology of such auctions.

They identify two distinct sets of countries in terms of the auctions' features, policy interventions, and outcomes.

In Ghana and Uganda, the exchange rate auctions are judged to have been largely on target in exchange rate unification, exchange rate stabilization, and efficient allocation of foreign exchange.

The auctions in Nigeria and Zambia, on the other hand, were subject to frequent policy interventions, resulting in unsustainable auctions, inefficient allocation of foreign exchange (through ad hoc disqualifications), limited unification, and a rather volatile exchange rate.

The conclusions reached by Aron and Elbadawi are broadly corroborated by a statistical analysis of weekly micro-auction data for all four countries.

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of the departmental project "Foreign Exchange Auction Markets and Exchange Rate Unification in Sub-Saharan Africa." Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Raquel Luz, room N11-053, extension 39059 (33 pages).

1396. Foreign Exchange Auction Markets in Sub-Saharan Africa: Dynamic Models for Auction Exchange Rates

Janine Aron and Ibrahim Elbadawi
(December 1994)

A strong case is made for a gradual approach to exchange-rate unification in Sub-Saharan Africa because of the huge fiscal and other macroeconomic imbalances that prevail there — and the rudimentary nature of the banking system and other economic institutions.

In this analytical sequel to *A Typology of Foreign Exchange Auction Markets in Sub-Saharan Africa*, Aron and Elbadawi compare the micromanagement of different foreign exchange auctions in Sub-Saharan Africa.

Multi-unit auctions for foreign exchange were introduced in a number of countries in the 1980s and 1990s, in a transitional step toward a credible, sustainable, unified regime, such as an efficient interbank market. But there is little understanding of how auction markets function in Sub-Saharan Africa, and there has been virtually no research on the causes of frequent policy reversals or of auction failure.

One possible cause of failure — apart from thin markets, macroeconomic laxity, and vulnerability to terms-of-trade shocks and fluctuations in the disbursement of foreign aid — is the inappropriate design and management of auctions.

Aron and Elbadawi estimate models for the microdeterminants of the auction rate, using weekly data on foreign exchange auctions for Ghana, Nigeria, Uganda, and Zambia. Among the policy lessons:

- Nigeria and Zambia failed to unify and stabilize the exchange rate partly because there was no reserve price rule. When bidders learn such a rule, speculative bidding diminishes.
- The management of a credible, sustainable reserve price policy requires an efficient secondary market.

A simple underlying model, synthesized from the theoretical literature on auctions, specifies the auction rate as a function of fundamental variables and structural shift dummies. The repeated, sequential nature of these multi-unit auctions and the nonstationary nature of most of the auction variables are captured empirically by a cointegrated (error correction) framework.

In addition to consistently estimating long-run and short-run parameters of auction fundamentals, the error correction model allows asymptotically efficient testing of three policy hypotheses deriving from auction theory: the competitiveness hypothesis, the effect of uncertainty on the auction-determined rate, and the revenue-equivalence hypothesis.

In other words, they used these models to test the impact on the level of the auction rate of increased competition among bidders, of the effect of uncertainty (proxied by a volatile supply of foreign exchange), and of different pricing mechanisms (Dutch and marginal pricing).

This paper — a product of the Macroeconomics and Growth Division, Policy Research Department — is part of the departmental project "Foreign Exchange Auction Markets and Exchange Rate Unification in Sub-Saharan Africa. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Raquel Luz, room N11-053, extension 39059 (38 pages).

1397. Are Private Capital Flows to Developing Countries Sustainable?

Uri Dadush, Ashok Dhareshwar, and Ron Johannes
(December 1994)

Will the spectacular surge in private capital flows to developing countries in the 1990s be followed, as some worry, by an equally spectacular reversal of flows, leading to a financial crisis like the one that followed the last such surge, in the 1970s? A generalized reversal is unlikely. But in-

dividual countries may experience volatile financial flows and changing terms of access to capital markets.

The remarkable surge in private capital flows to developing countries since 1990 has greatly facilitated their rapid growth, at a time when OECD countries have been in, or passed through, recession. The importance of these flows to the current account of several large developing countries has caused concern about their sustainability, especially if international interest rates continue rising.

The form of these flows, and their source — investors rather than commercial banks — causes concern about their short-term volatility. To address the issue of sustainability, Dadush, Dhareshwar, and Johannes draw on analyses of international financial flows and economic prospects carried out by the Bank's International Economics Department. They conclude that private capital flows to developing countries are likely to be sustained at, or near, current total levels for the following reasons:

- Much of the private flow comes from direct investment. Foreign direct investment has increased as international businesses pursue globalization strategies. Firms are taking advantage of liberalization drives and rising incomes in developing countries, as well as dramatic changes in transport and telecommunications — factors that are structural rather than cyclical, and that are likely to be reinforced by implementation of Uruguay Round agreements.
- Sources of finance are more diversified. There is greater risk-sharing between creditor and debtor. Funds are predominantly going to the private sector (not sovereign governments). And developing countries still account for less than 1 percent of the investment portfolios of OECD investors. In the 1970s, commercial bank loans accounted for proportionately more flows. Now, increasingly large roles are played by bondholders, equity investors, and money market funds.
- A prolonged major increase in international interest rates would jeopardize continuation of the flows at current levels, but the likelihood of such an increase in the next three to five years is slim. Any rise in interest rates in industrial countries will largely reflect rising demand for credit because of increased economic activity, which will benefit developing country exports. Commodity prices have surged in the past six months, but measures of core inflation, including unit labor costs, are at a historic low. This scenario is very different from the combination of high interest rates and economic recession the developing world faced in the early 1980s, as high and rising inflation induced sudden tightening of monetary policies.

Still, significant areas of risk deserve attention from developing country governments, international financial institutions, and industrial country investors. Some major recipients of private capital flows are vulnerable to sudden changes in both domestic or external environments. And portfolio equity flows are likely to be more volatile than other forms of private capital flows.

The policy response to large capital inflows should depend on whether the current account deficit is sustainable and the degree to which it is over- or under-financed. While the external environment is favorable, vulnerable countries have a window of opportunity to undertake adjustment.

This paper — a product of the International Economic Analysis and Prospects Division and the International Finance Division, International Economics Department — is part of a larger effort in the department to understand the determinants of private capital flows to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jackie Queen, room S8-216, extension 33740 (41 pages).

1398. The Cost of Air Pollution Abatement

Raymond S. Hartman, David Wheeler, and Manjula Singh
(December 1994)

Econometric estimates of air pollution abatement costs for 100,000 U.S. factories provide conservative benchmarks for benefit-cost analysis of pollution control strategies in developing countries. They also suggest that U.S. command-and-control regulation has reduced air pollution at unnecessarily high cost.

Using data from the U.S. Census Bureau, Hartman, Wheeler, and Singh have developed comprehensive estimates of pollution abatement costs by industry sector for several major air pollutants. Their results provide conservative benchmarks for benefit-cost analysis of pollution control strategies in developing countries. They also provide striking evidence of inefficiency in U.S. command-and-control regulation.

The cost estimates reflect the experience of about 100,000 U.S. manufacturing facilities under actual operating conditions. They are based on a complete accounting of costs — including capital, labor, energy, materials, and services. So, they should be more useful for benefit-cost analysis than idealized engineering estimates. But they also reflect strict pollution control regulation and input prices which are probably somewhat higher, on average, than those in developing countries. They should be interpreted as conservative estimates for environmental planning in developing countries. Regulatory options that are judged to have high net benefits using these numbers would probably look even better if local abatement cost data were available.

The estimates in this paper can provide useful information for pollution charges. They can also help make targeted regulation more cost-effective. With scarce resources for monitoring and enforcement, new regulatory institutions in developing countries will want to focus initially on industry sectors that are the main sources of locally-dangerous pollutants. After those sectors are identified, targeted regulation should be informed by sectoral differences in abatement cost. The estimates suggest, for example, that cost-effective control of suspended particulate emissions will focus on wood pulping rather than steelmaking when both are major sources of suspended particulates. The reason: average particulate abatement costs are four times higher in steelmaking.

This paper — a product of the Environment, Infrastructure, and Agriculture Division, Policy Research Department — is part of a larger effort in the department to support more cost-effective environmental regulation in developing countries. The study was funded by the Bank's Research Support Budget under the research project "Econometric Analysis of Pollution Abatement Costs" (RPO 677-81). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Elizabeth Schaper, room N10-037, extension 33457 (30 pages).

1399. How Important to India's Poor is the Urban-Rural Composition of Growth?

Martin Ravallion and Gaurav Datt
(December 1994)

Rural economic growth in India in 1951–91 brought large benefits to both the rural and urban poor. By contrast, the urban economic growth process in this period left many of the urban poor behind — and had negligible impact on rural poverty.

Views differ on how much India's poor have shared in the growth and contraction in the country's average standard of living since independence. Some have argued that the rural growth that accompanied the green revolution in the 1970s and 1980s brought few gains to the poor in the rural sector, while others have viewed agricultural growth as the key to rural poverty reduction. Views have also differed on how much urban growth has benefited the poor.

Ravallion and Datt used 33 household surveys spanning 1951–91 to examine the relative importance to India's poor of both urban and rural consumption growth. Among other things, they tested for spillover effects between sectors: Does urban growth have the same effects on the rural distribution of consumption as rural growth has on urban distribution?

Urban growth reduced poverty, but adverse distributional effects within the urban sector reduced the gains to the urban poor, and urban growth had no significant effect on rural distribution.

Rural growth was distribution-neutral within the rural sector and so brought sizable absolute gains to the rural poor. Rural growth also had propoor distributional effects on urban poverty.

Identifying the nature of these intra- and inter-sectoral effects reinforces the importance of rural growth to national poverty reduction.

Future progress in fighting poverty in India will depend on *both* the rate of rural economic growth and the country's success in switching to a more propoor process of urban growth

This paper — a product of the Poverty and Human Resources Division, Policy Research Department — is part of a larger effort in the department to better understand the economywide and sectoral determinants of progress in fighting poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Cook, room N5-061, extension 33902 (29 pages).

1400. Technical and Marketing Support Systems for Successful Small and Medium-Size Enterprises in Four Countries

Brian Levy with Albert Berry, Motoshige Itoh, Linsu Kim, Jeffrey Nugent, and Shujiro Urata
(December 1994)

A healthy business and incentive environment is the main determinant of whether small and medium-size enterprises will succeed. But a liberalized private marketplace will not necessarily ensure industrial development. For many firms, subsectors, and countries, well-functioning collective support systems for marketing and technology accelerate industrial success.

Studies of successful small and medium-size enterprises (SMEs) and their marketing and technical support systems were undertaken for Colombia, Indonesia, Japan, and the Republic of Korea. Three to four subsectors were examined in each country. The sample worldwide amounted to 445 firms.

Mechanisms to support export marketing varied across countries and subsectors. How they varied depended greatly on whether SMEs operated within well-developed private networks. When market penetration begins, transaction costs are high and collective marketing support can be important. As markets "thicken," initiatives by foreign buyers become more important. Generally the most effective collective marketing support was of the kind that can be provided more effectively by decentralized organizations — such as industry associations or local governments and chambers of commerce (to support firms' participation in trade fairs, for example) — than by central government institutions.

Private mechanisms were more important than collective mechanisms for helping firms improve their technological capability. Demand for collective mechanisms tended to be greater when technological requirements of production were complex or when the endowments of private technological networks in certain countries or industries were weak.

Broad-based collective technical support facilitates the emergence of an information-rich environment for firms, and may be worth pursuing in many settings. Examples of such support include:

- Sponsoring courses on specialized topics.
- Facilitating the use of expert consultants (either directly, by making a consultant available to a broad array of firms, or indirectly, by providing financial support for the use of consultants).
- Promoting information-sharing among firms.

Countries that already have strong broad-based collective support and that are moving into technologically more advanced activities might consider "high-intensity" support, but should proceed with caution.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — is part of a larger effort in the department to examine the impact of proactive intervention on SME performance. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Daniele Evans, room N9-055, extension 38526 (43 pages).